DEPARTMENT OF AGRICULTURE APPROPRIATIONS FOR 1956

HEARINGS

BEFORE THE

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

EIGHTY-FOURTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON AGRICULTURE APPROPRIATIONS

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ROSS P. POPE, *Executive Secretary to the Subcommittee*

PART 2

AGRICULTURAL CONSERVATION PROGRAM SERVICE
AGRICULTURAL RESEARCH SERVICE
EXTENSION SERVICE
FARMER COOPERATIVE SERVICE
SOIL CONSERVATION SERVICE

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DEPARTMENT OF AGRICULTURE APPROPRIATIONS FOR 1956

TUESDAY, FEBRUARY 1, 1955.

AGRICULTURAL RESEARCH SERVICE

WITNESSES

ERVIN L. PETERSON, ASSISTANT SECRETARY OF AGRICULTURE
DR. B. T. SHAW, ADMINISTRATOR, AGRICULTURAL RESEARCH SERVICE
DR. GEORGE W. IRVING, Jr., DEPUTY ADMINISTRATOR FOR RESEARCH
DR. M. R. CLARKSON, DEPUTY ADMINISTRATOR FOR REGULATORY PROGRAMS
F. H. SPENCER, ASSISTANT ADMINISTRATOR FOR MANAGEMENT
DR. A. H. MOSEMAN, DIRECTOR, CROPS RESEARCH
DR. E. F. KNIPLING, CHIEF, ENTOMOLOGY RESEARCH BRANCH
DR. SHERMAN JOHNSON, DIRECTOR, FARM AND LAND MANAGEMENT RESEARCH
W. W. PATE, ASSISTANT CHIEF, SOIL AND WATER CONSERVATION RESEARCH BRANCH
DR. W. C. ACKERMANN, HEAD, WATERSHED HYDROLOGY SECTION
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DR. R. E. HODGSON, CHIEF, DAIRY HUSBANDRY RESEARCH BRANCH
DR. G. E. HILBERT, DIRECTOR, UTILIZATION RESEARCH
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JOSEPH C. WHEELER, DIRECTOR OF FINANCE AND BUDGET OFFICER, DEPARTMENT OF AGRICULTURE
CHARLES L. GRANT, DEPUTY DIRECTOR OF FINANCE, DEPARTMENT OF AGRICULTURE

Mr. WHITTEN. The committee will come to order.

We are pleased to have with us Mr. Ervin L. Peterson, Assistant Secretary of Agriculture, Dr. B. T. Shaw, Administrator of ARS, and their associates who deal with the field of agricultural research.

Purpose Statement

We will insert at this point in the record pages 1 and 2 of the justifications.

(The pages referred to are as follows:)

Agricultural Research Service

PURPOSE STATEMENT

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953, under the authority of section 161, Revised Statutes (5 U. S. C. 22), Reorganization Plan No. 2 of 1953, and other authorities. It conducts all of the production and utilization research of the Department (except forestry research), and the inspection, disease, and pest control and eradication work closely associated with this research. The Administrator of this Service is also responsible for the coordination of all research of the Department.

The program of the Agricultural Research Service is organized under three areas of activity as follows:

1. Research is conducted under five major categories: (*a*) Crop research; (*b*) farm and land management research; (*c*) livestock research; (*d*) human nutrition and home economics research; and (*e*) utilization research.

2. Regulatory activities are conducted under three major categories: (*a*) Plant disease and pest control; (*b*) animal disease and pest control; and (*c*) meat inspection.

3. The Service administers the Federal-grant funds for research at the State agricultural experiment stations and operates experiment stations in Puerto Rico, Virgin Islands, and Alaska.

The Agricultural Research Service also carries out emergency programs, when necessary, for the control and eradication of animal diseases, such as foot-and-mouth disease and vesicular exanthema of swine, and for the control of emergency outbreaks of insects and diseases. In addition, research on the feasibility of developing domestic sources of supplies for agricultural materials designated as strategic and critical by the Office of Defense Mobilization is conducted upon their recommendation or approval. In the current fiscal year limited research on foot-and-mouth disease has been undertaken at Plum Island, N. Y., in facilities made available to this Department by the Department of the Army.

The Agricultural Research Service maintains a central office in Washington, D. C., and operates the 12,000-acre Agricultural Research Center at Beltsville, Md. However, most of the work is conducted at approximately 520 locations in the United States, Territories and possessions, and at several locations in foreign countries. Much of the work is conducted in cooperation with the State agricultural experiment stations and with other agencies, both public and private. On November 30, 1954, there were approximately 12,675 full-time employees, of which 2,951 were in the Washington metropolitan area and 9,724 were located at other points in the United States, Territories and possessions, and foreign countries.

	Appropriated, 1955	Budget estimates, 1956
Appropriated funds:		
Salaries and expenses:		
Research	$35,822,000	$37,684,000
Plant and animal disease and pest control	17,689,579	17,254,000
Meat inspection	14,325,000	14,325,000
Total	67,836,579	69,263,000
Payments to States, Hawaii, Alaska, and Puerto Rico	19,453,708	24,753,708
Foot-and-mouth and other contagious diseases of animals and poultry—Research	1,900,000	1,900,000
Total appropriated funds	89,190,287	[1] 95,916,708

[1] In addition, the 1956 budget proposes an appropriation in the amount of $5,788,897 to reimburse the Commodity Credit Corporation for funds advanced and expenses incurred in fiscal year 1954 for eradication of foot-and-mouth and other contagious diseases of animals and poultry.

Statement of Assistant Secretary Peterson

Mr. Whitten. Mr. Peterson, we will be glad to have your general statement.

Mr. Peterson. Thank you, Mr. Chairman.

I am glad to have the opportunity to discuss with you the budget request of the Agricultural Research Service.

I understand it is customary to include a brief outline of the experiences of new officials of the Department. With your permission, I would like to outline briefly my background and experience.

I am a native of North Bend, Oreg., and received most of my education in California. I attended the University of California in Los Angeles from 1926 to 1929.

From 1931 to 1940, I operated a dairy farm in southwestern Oregon. I have been an active member of the grange since 1936. In 1938, I served as chairman of the Coos County Agricultural Outlook Conference; from 1938 to 1943, as president of the Coos Bay Mutual Creamery Co., a cooperative, and in 1942 as vice president of the Oregon Dairy Association. I was elected county judge of Coos County, Oreg., and served from January 6, 1941, to May 1, 1943, when I was appointed by the then Governor as director of the Oregon State Department of Agriculture. I served in this position until I resigned to come to the Federal service.

In 1948, I served as president of the National Association of Secretaries, Commissioners, and Directors of Agriculture, and was a member of its executive committee several different years. I also had been president of the association's western regional group.

I came to the Department November 15, 1954. Immediately I began to familiarize myself with the various programs and operations of the agencies in the Federal-States relations group, for which I am responsible. I found the budget before you today well along in its development. I have held detailed discussions with Dr. Bryon Shaw regarding the Agricultural Research Service budget and find it in line with my own thinking. This was not surprising when I learned how this information was developed. You are familiar with these procedures, but I was impressed with the extensive consideration given suggestions and recommendations from groups and individuals who reflect the needs of farmers and the public. We have had the counsel of Members of Congress, research and marketing advisory committees, State officials, farm organizations, and others. I wholeheartedly endorse the budget estimates submitted here.

Research Contributions to Agricultural Progress

In our lifetime we have seen research literally revolutionize our agriculture. In the last 15 years, our total farm output has increased almost 40 percent. At the same time farm labor has decreased by a third. Output per man-hour of labor has gone up 90 percent.

Many things have contributed to this progress, but one of the primary forces has been improved farm practices developed through research.

A strong research program is essential to the maintenance of a sound agriculture and a well-fed people. Stem rust of wheat illustrates our dependence upon research. In the last 20 years, many new rust-resistant varieties of wheat have been developed. In spite

of this, the 15B strain of rust took 75 percent of our durum wheat crop in 1954, and accounted for most of the 25-percent loss to rust in the hard red wheat in the Plains area. The reason is that the rust organism is hybridizing in nature and creating new races of the disease about as fast as our plant breeders are able to develop new varieties.

Our growing population, with its increasing demand for livestock and livestock products, again underscores the need for more research. Profitable production of livestock in many areas depends on the development of improved forage crops and lower costs in converting these crops into livestock feed. Of the 75 or more important forage grasses, less than a dozen have been improved by breeding. Disease losses in hay and pasture crops are estimated at more than a billion dollars annually. If forage is to become more important in the rations of livestock, it must also be harvested and cured in such a way that its feeding value will be preserved. Processing costs must be low enough to make it pay.

Along with better feed, farmers need animals that can make more efficient use of it.

Research has already shown that ability to make cheap and rapid gains is inherited. Scientists have steers in the test lot that gain 3 pounds a day, and do it cheaply. The next step is to get this gaining ability more widely identified and propagated so that livestock producers can get the benefit of it. The Department is now cooperating with 38 States and some individual cattlemen in this work.

This beef cattle breeding program is a good example of how the Department and the States work together. It illustrates how national research resources can be brought to bear on a problem of national importance. The States and the Department are prepared to undertake the expanded research program reflected in this budget in a coordinated and cooperative manner.

As acres are diverted from crops that are in surplus, farmers need profitable alternative crops.

Research could be of real service to the wheat farmers in the high plains, for example, if scientists could develop improved varieties of sorghum, or a winter barley that is adapted in that area. New and improved grasses are needed for our rangelands.

New crops might well be one way to help farmers adjust to the needs of the times. Look what happened to soybeans when scientists went to work on them. Thirty years ago we harvested less than 5 million bushels. Last year the production was 340 million bushels.

Research that transforms perishable foods into storable form is bound to be useful in leveling out peaks and valleys in the supply of agricultural products. Research has already given us frozen concentrated and powdered fruit and vegetable juices and good powdered eggs and potatoes. We are making progress in finding how to make good powdered whole milk. It may well be that a stable whole milk concentrate or powder will do for dairy farmers what frozen concentrates have done for orange growers.

PLANT AND ANIMAL DISEASE AND PEST CONTROL

I would like to comment also on the control and regulatory activities of the Agricultural Research Service. There is, of course, a close interrelationship between research and regulatory activities. These

programs must be closely coordinated if we are to be effective in developing and protecting our agriculture.

As a former director of a State department of agriculture, I have had close contact with the many pressing problems concerning insects and diseases of crops and livestock that are a constant threat to the agricultural economy of this country. These problems pose a continuing challenge. The preservation of our capacity to produce requires that we be in readiness to meet this challenge from whatever source it might arise.

The States and the Federal Government both have a proper interest and a responsibility in these activities. The States are able to more effectively control known and clearly defined infestations of insects and diseases of either general or local distribution. On the other hand, the Federal Government is in a better position to uncover new infestations and develop methods and plans for their control or eradication, especially those that affect interstate or foreign commerce.

It is evident that the Department and the States must cooperate closely in planning and carrying out control and regulatory programs so that each will be engaged in its proper sphere and that together they can protect American agriculture. In line with the suggestions made by this committee last year, the Department has conducted many discussions with State officials and is actively working toward a better understanding of Federal-State relationships.

Cooperative Federal-State efforts were responsible for the eradication this year of all known outbreaks of scrapie of sheep. This insidious virus disease attacks the sheep's nervous system and is usually fatal. Its incubation period lasts up to 3 years, and it is still too early to be sure it has been completely eradicated. We are keeping a close watch on the situation.

A first principle in pest control is to eradicate a new infestation as soon as possible. This is undoubtedly what Congress had in mind in setting up the contingency fund. This fund has been most helpful this year in enabling us to take prompt action against four potentially dangerous pests.

MEXICAN FRUITFLY

The Mexican fruitfly has recently moved into southern California from western Mexico. This pest, which attacks oranges and grapefruit and some deciduous fruits, is capable of great damage to the entire southwestern fruit industry. The insect lays its eggs beneath the skin of the fruit, and the larvae do the damage. Infested fruit is not marketable. A general infestation of the Mexican fruitfly would reduce fruit yields, increase the cost of production, and hamper the movement of fruits from this area. Cooperative action is now underway to prevent this pest from getting a permanent foothold in this country.

KHAPRA BEETLE

The Khapra beetle, a stored-grain pest native to India, Ceylon, and Malaya, was discovered in California in November 1953. It is now known to be also in Arizona and New Mexico. It is considered to be one of the most destructive pests of stored grains yet to be found in this country. It feeds on all grains and grain products, beans, peas, peanuts, and other seed products. The present infesta-

tion is confined to about 78 grain- and seed-storage warehouses, and cooperative action is being taken to control this pest and prevent its spread.

EUROPEAN CHAFER

The European chafer, introduced into the United States some 14 years ago, was successfully confined until recently to limited areas around Newark, New York, and Meriden, Conn. In 1954, however, the insect was found in several other areas in New York and also at Capon Bridge, W. Va. The larvae of this pest attack the roots of many cultivated plants, including pasture grasses, lawns, small grains, and nursery stock. Cooperative control work is now in progress.

BURROWING NEMATODE

The burrowing nematode was recently found to be responsible for "spreading decline," a condition that has become increasingly destructive to Florida citrus groves. This pest burrows into the roots of citrus trees, destroying the deeper roots and causing the tree to become unhealthy and low-producing. Fruit from such trees is unmarketable. Control by presently known methods is exceedingly difficult and costly. We have just initiated cooperative work with Florida on this pest.

I have only been able to give examples of some of our research and regulatory work. The Agricultural Research Service budget proposes support for work that we sincerely believe needs to be done to protect our capacity to produce food and fiber and to further improve the efficiency of production, utilization, and marketing. I appreciate this opportunity of appearing before you. Dr. Shaw and his associates will present further detailed information.

Mr. WHITTEN. Thank you, Mr. Peterson. We are very much interested in your statement. Personally, I have heard many nice statements about you in the short time that you have been here. I think perhaps I should tell you that you are talking to the best group of farmers that I know, the most intelligent group of farmers, not that any of us on this committee know as much about farming as lots of others, but we have followed the only sure way of farming and that is to have a salary on the side. I wonder if you maintain your farming interests.

Mr. PETERSON. I do not, Mr. Congressman.

EFFICIENCY IN FARMING

Mr. WHITTEN. I have before me the speech of the Under Secretary of Agriculture, Mr. Morse, which he is delivering today at the Kentucky Farm and Home Hour, College of Agriculture, University of Kentucky, in which these significant statements are made:

> Heads up, alert, progressive farming in 1955 will produce profits. No farmer can afford to be merely average.

Now, that sounds like 50 percent of the farmers can expect to show profits because you cannot afford to be merely average. Of course average means 50 percent below and 50 percent above.

In that same speech, he points out another thing which is significant.

Efficiency on farms is becoming mandatory. The average capital investment for each farm worker is four times as high as in 1940—about $20,000. That is double the investment per worker in many industries.

Mr. Morse does not leave them with that high cost without offering some means of how to meet it. He says:

More employment opportunities are now available to members of farm families in Kentucky due to increased industrialization. Such additional income is especially welcome to families on small farms. There is security and stability when people can live on the land and have employment in factories, offices, and services. It helps build a stronger and more stable America.

And another significant statement:

Perhaps one reason for this sound management of finances by farmers is the increasing extent to which farmers and their families are taking advantage of off-farm employment.

I mention that because this committee has been very much interested in research and, if Mr. Morse's portrayal of the picture is correct, I think we need to give added emphasis to research so that farmers can make a living farming.

COMPREHENSIVE REVIEW OF RESEARCH

In the past, we have supported the Agricultural Research Service. I think that this committee has sponsored most of the increases received and has fought on the floor many times for research. For many years we followed the policy of reviewing each item in the Research budget and that is a difficult thing to do in many ways. However, it had certain benefits. On one occasion, the Research Service was asking to build a $250,000 laboratory at Chicago so that they could experiment with fuels under extremely cold conditions. Just prior to that time, I happened to be down at Eglin Field, Fla., on military assignment. They had a big plant down there for the Army and several times as big as a football field. I asked the Department of Agriculture witnesses why they did not take it up with the Army and see if they could not use the one that they had. They agreed to do that since the committee did not give them the money. They later reported that when they asked the Army about it, the Army people said: "We will let you have the one at Eglin Field, but why don't you use the one across the river at Fort Belvoir?"

I wonder what chance you have had, now that we are getting increased sums for research, to check and see what parts of the program may be duplicating other projects and to weigh the relative value of the program as it is now set up. Your statement shows that you have been here since November. I want to say frankly that I have been here 10 or 12 years and I have not mastered this subject, so we will certainly bear with you; but we would like to have your impressions on the necessity for further research so as to offset these constantly increasing farm costs and perhaps to get back to where a farmer can make his living on the farm.

Mr. PETERSON. Mr. Chairman, that is, of course, a part of our objective in research, so that the resources, both human and physical, of farm people may be applied as efficiently as possible and as a contributing factor to raising their income.

Mr. WHITTEN. Have you had time to go over the overall picture? You mention that you are pleased to see how much sifting and effort

was made to go over these things. Have you had a chance to do anything other than see the system that they use in an effort to prevent duplication?

Mr. PETERSON. Very little opportunity, Mr. Chairman, except as to the division of funds between basic and applied research.

MARKETING COSTS

Mr. WHITTEN. Mr. Wells, Administrator of the Agricultural Marketing Service, has just testified here and used a series of charts to show that by far the greater part of increased costs to the consumer comes from increases in the spread from the farmer to the consumer. He was not able to give us exact figures as to which segment gets each part of that dollar, but as I recall the testimony, there has been an increase in the spread from the farmer to the consumer of more than 85 percent since 1945. The record shows that the farmer's share of the consumer's dollar for food has gone down to about 43 percent. That means that 57 percent of the consumer's food dollar is going to someone other than the farmer.

What research, if any, is there going on in the Department to work on that 57 percent? Do you have any projects of that kind with which you are familiar, or should we ask Dr. Shaw that?

Mr. PETERSON. I would ask that you direct that question to Dr. Shaw, Mr. Chairman, please.

Dr. SHAW. The research in this field, in the whole field of marketing is now in the Agricultural Marketing Service that Mr. Wells is in charge of; they will discuss it in more detail. There is work under way in the Agricultural Marketing Service directed at more precisely measuring these costs and the factors in the costs makeup; and also they are conducting research to try and increase the efficiency of the marketing operations in the same way that we have increased the efficiency of production operations. In this way they hope to cut down on part of that marketing expense. A large share of the expense, as you know, in those activities that go on after produce leaves the farm can be charged up to labor and transportation. We feel that there are considerable opportunities to effect labor-saving devices and techniques, and develop new methods in the marketing system just as there have been in the production system. They are working on that. There are some considerable inefficiencies in some places that are hard to tackle. I think a year or two ago we discussed before the committee the wholesale marketing situation in New York and the difficulties there of the outmoded methods. The costs are extremely high. The main problems in marketing research are to develop greater efficiency of labor and to cut down on wastes and losses that occur in the marketing generally.

Mr. WHITTEN. As you know, Dr. Shaw, my feelings have been consistent in season and out of season under several Secretaries of Agriculture. I hope my relations have been fine with all with whom I have dealt. I certainly have felt so and feel that way about it.

However, I have read and heard much in recent years that the answer to the farm problem is to let the farmer learn how to get along with less labor and, of course, that approach means that farm labor is left without anything to do.

I have heard many other statements, such as Mr. Morse has made here, to the effect that if you are in the high brackets you make

money and if you are average or below you will not. I have wondered if we should not give our attention to the 57 percent of what the consumer pays which takes place after commodities leave the farmer. The point I make is that in agricultural research we are trying to work on the little end. The farmer for his labor, for his $20,000 per worker investment, gets 43 percent. And yet, here is 57 percent that the consumer is paying which the farmer does not get, does not see; does not have anything to do with it.

I raise this question to see whether in our review of the research work of the Department we should not be giving our attention to what labor is getting, what transportation is getting, what transportation unit has increased its freight rates; what is behind those freight rates. Is it law that requires a determination of what is a fair return to a man who owns a railroad, based on cost of operation? I am sure personally it is. As you say, a lot of it is labor and other things; but so far, I have not been able to find anyone who can tell us who and where.

In that connection, an investigation was made last year of the research work. We will get into it more in detail as we get to the various projects. However, in that study it developed that you are spending some of your money for orchids of Guatemala; and you are spending research funds for the flora of Dominica. You are giving $309,000 to the Farmers Cooperative Service for which this Congress appropriates direct.

CONTRACT RESEARCH

A few years ago, we urged that the Department contract some of its research work, where it was a specific program that you had in mind. The intent of the Congress, as I understood it, was not to use this as a means of annual income to some institution that we all might like, but to do it by contract so that when the job was done we did not have a lot of employees left on our hands. This investigation disclosed that one institution has been getting about the same money since 1947, first one thing and then another. It has gotten to where the contract authority is being used to do the very thing that we intended the contract authority to prevent.

REVIEW OF PROJECTS

So, as we develop these hearings, I hope, Dr. Shaw, that you will come prepared to go into these things item by item. May I remind you again that this committee had the right to look into each and every project in research as we did for years, in an attempt to see that research, which we all believe in, was directed to the places where there was the greatest need. We could not always tell that, but the case you could make for each project was, at least, some indication of what was best.

Several years ago we waived that right, voluntarily on my own suggestion when I was chairman of this committee. However since it has been several years since we did review them in detail and since I have been unable to find out just where this 57 percent is going, and I know the American people have not been told where it is going, I believe that we should do that again project by project. That is particularly necessary when I see that money is going for such research projects as orchids of Guatemala and the flora of Dominica.

Now, certainly I have a very high regard for Dr. Shaw and for you, Mr. Peterson, and there is nothing personal in this. We all believe in research, but we want to be sure as best we can, that the money is spent for the most worthwhile projects in the field of research.

Mr. PETERSON. I want to assure you, Mr. Chairman and gentlemen of the committee, that we are just as interested in seeing that the funds are expended efficiently and expeditiously as is this committee.

Mr. WHITTEN. I know the folks around you feel that way and I am sure you do, sir; and in our discussions I hope we will all keep it in mind that we accept that. It is just a case of working together to try to put this effort where it will do maximum good.

Mr. PETERSON. We certainly welcome that approach, sir.

Mr. WHITTEN. Dr. Shaw will have a general statement which will follow. Are there any questions or statements at this time?

INCREASED BUDGET FOR BURROWING NEMATODE

Mr. NATCHER. After Dr. Shaw's general statement, I would like to make one observation insofar as Mr. Peterson is concerned. That is regard to the burrowing nematode and the spreading decline.

Mr. WHITTEN. If it has to do with Mr. Peterson's statement, I suggest that the question be asked right now.

Mr. NATCHER. Mr. Chairman. Mr. Peterson, I was very much interested in your statement. I think you made a fine statement and particularly that portion of your statement concerning the burrowing nematode and spreading decline. My friend and colleague, Mr. Horan, and I had the pleasure of making an inspection trip in Florida some several days ago, a rather quick trip, Friday and Saturday of one week end. We were pleased to see the fine cooperation between the Department of Agriculture, the State of Florida, and the citrus industry generally. It would do your heart good, Mr. Peterson, to see the fine work that is being done in the State of Florida, along this line that you point out in your statement.

You travel along the road and as Mr. Horan will bear me out there is a beautiful orange grove on one side of the road; the trees are full of fruit—they are at the present time—the leaves are almost black-green, full clear to the top. On the opposite side of the road the leaves on the trees are a light green. The leaves are out of the tops of the trees. They are gone. You can see where the spreading decline has started. We inspected and went through the different research laboratories that the Department has in Florida as well as those maintained by the State of Florida and by the citrus industry generally. And I say to you, sir, that this is a fine piece of work—and by the way, Florida is not my home; I am from Kentucky. It is a fine piece of work and great strides have been taken, and I think, Mr. Horan, you will agree with me.

Mr. Peterson, I notice here that you state that—

I wholeheartedly endorse the budget estimate submitted here.

You would not fall out with this subcommittee provided they saw fit to extend and add to your laboratory at Winter Haven, Fla., provided the committee considered it necessary and the whole Appropriations Committee agreed whereby more room can be added; more equipment could be added to your laboratory in Winter Haven, Fla.? You are acquainted with that particular setup?

Mr. PETERSON. I am not particularly acquainted with that particular setup but answering your question, we are certainly amenable to whatever suggestion this subcommittee and the entire committee and the entire Congress might arrive at.

Mr. NATCHER. The discovery of the nematode and spreading decline and the work that is now being done is certainly encouraging. I just want to point that out to you. I think, Mr. Horan, you will agree with my statement generally. Thank you, Mr. Chairman.

Mr. ANDERSEN. Mr. Chairman, I would like to join you in welcoming Mr. Peterson before this subcommittee for the first time. It is my feeling that Mr. Peterson has under his supervision a good share of the most important subdivisions of Agriculture and I think you have quite a job ahead of you, Mr. Peterson, in seeing to it that they are properly supervised. I am sure that this subcommittee will give you whatever assistance we can.

Mr. PETERSON. Thank you, sir; that is appreciated;

Mr. WHITTEN. Are there any other questions directed to Mr. Peterson? If not, we will have Dr. Shaw's general statement.

Dr. SHAW. I would like to present a proposed way in which we might handle the hearings. If you agree, I will discuss some of the general features and then Dr. Moseman and other directors will discuss specific programs.

Mr. WHITTEN. Dr. Shaw we will let you follow your own course. We start off believing in your subject matter and in you and your folks that we know in the Department.

STATEMENT OF ADMINISTRATOR, AGRICULTURAL RESEARCH SERVICE

Dr. SHAW. In the last 2 or 3 years I have appeared before this committee, I have tried to look ahead as to the needs and requirements for our agriculture as related to our population growth. This year I would like to look at the more immediate situation as to how soon we might expect to have agricultural production in adjustment with demand for agricultural products.

APPOINTMENT OF DEPUTY ADMINISTRATOR FOR RESEARCH

I have a few charts that I would like to discuss with you, but before I do that, I would like to introduce to you Dr. George W. Irving, Jr., who has been appointed as our Deputy Administrator for Research in the Agricultural Research Service.

Dr. George W. Irving is a biochemist and has spent most of his professional career in the Department. He is a native of Caribou, Aroostook County, Maine. He began his Government work in the United States Bureau of Standards on July 1, 1927, and transferred to the United States Department of Agriculture in 1928, working in soil microbiology and insecticide chemistry. After 1935 he spent 2 years with the George Washington University Medical School on a research and teaching fellowship in biochemistry and later went to Cornell University Medical College in the same work.

Dr. Irving was with the Rockefeller Institute in New York City for 3 years where he worked on enzymes. He returned to the United States Department of Agriculture in 1942 as head of the protein section of the oil and protein division of the Southern Regional Re-

search Laboratory at New Orleans, La., working mainly on the protein and oil chemistry of southern corps such as peanuts, cottonseed, and tung nuts. In 1944, Dr. Irving headed a new division at the Agricultural Research Center, Beltsville, Md., on biologically active compounds, working mostly on biochemistry of plant-disease resistance. He was engaged in some of the earliest work done on such plant-growth regulators as 2, 4–D and the radioactive isotopes.

Dr. Irving became Assistant Chief of the Bureau of Agricultural and Industrial Chemistry in 1947, coordinating the fundamental work of this agency and heading up the research on oilseeds and animal products. With reorganization of the Department's functions over a year ago, he became Chief of the Biological Sciences Branch of the Agricultural Marketing Service.

He was appointed as Deputy Research Administrator, Agricultural Research Service on October 7, 1954. In this position he will coordinate investigations of the 15 research branches of the Agricultural Research Service.

Now, if I may, I would like to discuss with you some charts. Looking at the question of when we might expect agricultural production to come into balance with the demand for agricultural products——

SURPLUS AGRICULTURAL COMMODITIES

Mr. WHITTEN. Doctor, the Secretary of Agriculture testified 2 or 3 weeks ago that about $4 billion of the commodities which the Commodity Credit Corporation owns are not being offered for sale in world trade on a competitive basis. I have gotten that in the record already, but I do think it appropriate here to make clear the meaning of your words when you say production and need for bringing agricultural commodities in balance.

I had the privilege of going to Europe as a representative of the Appropriations Committee in October. Like many others, I was throughout Asia during the war. So far as the need of the world for our production of agricultural commodities, there is no question about the need. So far as dollars are concerned, I am convinced, and I put the tables in the record to prove it, that dollars are not short throughout the world, to buy many of the commodities that we now produce in this country. We are following a policy and have for some years of holding our commodities off world markets on a competitive basis.

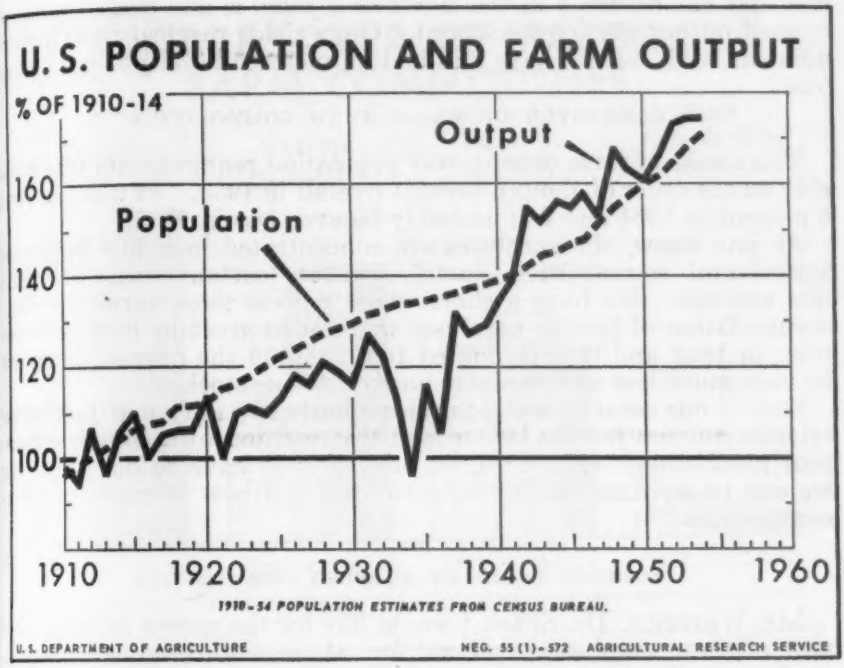
I am not trying to get you into that problem, but I do want to preface your statement with that comment so that we may have it made clear what you mean by the term "balance production with needs."

Dr. SHAW. Actually, what I have meant is to balance production against domestic needs with current levels of exports. Anything that would increase exports would speed up the time at which we come in balance under the conditions that I have used here.

RELATIONSHIP OF UNITED STATES POPULATION AND FARM OUTPUT

This first chart shows the relationship between population growth and the growth of the farm output in the United States from 1910 up to the present time. It is plotted up until 1954.

(The chart referred to follows:)



You will notice that there has been a rather parallel increase of farm output with population over the period of years. In between the two World Wars, farm output did not increase as fast as population. Since about 1940, the increase in farm output has been at a greater rate than the increase in population and that is despite the fact that population increases are accelerating in the period since 1940.

Mr. WHITTEN. Doctor, I think the record should show here that that increase from 1940 came at the direct request of the Secretary of Agriculture and the President of the United States. At that time we were trying virtually to feed the world, to help us win World War II. And at that time the farmer's production was not purchased on a cost-plus basis or under any other such assurances, except in some minor ways.

CONTRIBUTING FACTORS FOR INCREASED FARM OUTPUT

Dr. SHAW. Yes, sir. The principal factor, land-wise and research-wise, behind the increase in output between 1910 and 1920 was bringing in new land—more acres of agricultural production. There were some other minor factors, but that was the principal one.

In the period from 1920 to about 1938, the principal factor giving rise to increased farm output was the replacement of horses and mules by tractors, thereby releasing the acres that had been used to feed horses and mules, and providing additional acres for food and fiber.

From about 1938 to about 1948, increases in crop yields per acre and increases in livestock production per animal have been the principal contributing factors. However, also in this period there has been a continued reduction in numbers of horses and mules. That has contributed to some of this rise in farm output. From 1948, this further

rise that has occurred in the last 2 or 3 years is due primarily to increased output per livestock unit. Crop yields reached their highest point in 1948, but we have still had an increase in output per animal unit.

CARRYOVER OF MAJOR FARM COMMODITIES

The access of farm output over population requirements was probably on the order of about 6 percent overall in 1953. It was less than 6 percent in 1954 and will probably be even less in 1955.

As you know, the surpluses are concentrated in a few important agricultural commodities, namely, wheat, cotton, corn, and food fats and oils. We have a chart which reflects these surpluses. The accumulation of further surpluses was not as great in 1954 as it had been in 1953 and it is estimated that in 1955 the accumulation will be very much less and probably not add to our stocks.

One of our most pressing problems currently is to find productive alternative uses for the land that is represented by this current surplus production. Of course, we are going to have to do everything we can to continue to develop new uses and new markets for these commodities.

FOREIGN SALES OF SURPLUS COMMODITIES

Mr. WHITTEN. Dr. Shaw, I would like for the record to show what part of these supplies are offered for sale in world markets competitively and what part are not.

It is quite apparent from the hearings that we have had, that many of these commodities are not moving into consumption because of a governmental policy of not offering them for sale on a competitive basis. Therefore, I want you to show what part of these commodities are held by the Commodity Credit Corporation under its policy of not offering them for sale on a competitive basis.

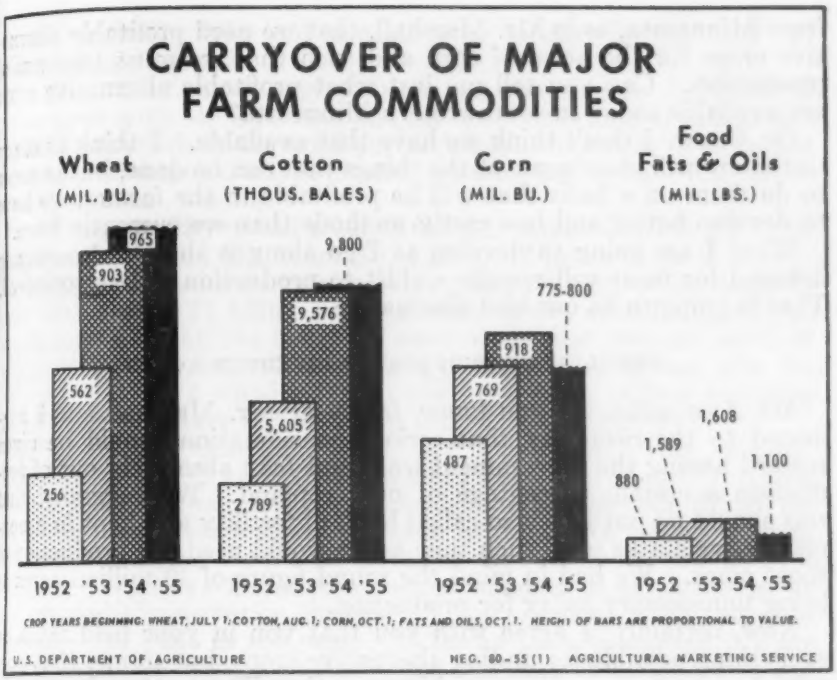
Mr. WHEELER. You mean the commodities on that chart?

Mr. WHITTEN. In connection with any reference that is made in this chart or subsequent charts, I want a division showing what part of it might be termed as surplus to world demand and what part is surplus because we would not sell it. I do not mean for you to rework your charts but we need such a statement following each one.

Mr. WHEELER. I want to make sure on insertion at this point whether you want it confined to the commodities on that chart.

Mr. WHITTEN. Insofar as Dr. Shaw's presentation is concerned, I do not want any false impression left—which I know he does not mean to leave. We can do that by following each of these charts with a table showing what part is in which category—in reference only to the commodities he uses in his illustrations.

(The chart and related material follow:)



Wheat: Although wheat has not been offered for export sale on a competitive-bid basis substantial quantities have been exported under the International Wheat Agreement and outside the agreement. Wheat sales are made at the market prices less the IWA subsidy in effect at the time of sales, giving exporters an opportunity to compete at world prices.

Cotton, corn: Neither of these commodities has been offered for export sale on a competitive-bid basis.

Food fats and oils: Includes butter, lard, beef fats, cottonseed oil, soybean oil, peanut oil, corn oil, olive oil, and sesame oil. Of this grouping butter and cottonseed oil from CCC stocks have been offered for export sale on a competitive-bid basis. Olive oil has not been so offered. The Corporation has no price-support inventories of the remaining commodities.

PROFITABLE ALTERNATIVE CROPS

Dr. SHAW. While I am sure we all agree that anything that we can do in developing new uses and new markets is important, I think that probably more important in achieving the balance of production with current demand would be to provide alternative uses for this land and to shift it into the production of commodities in greater demand.

Mr. ANDERSEN. Doctor, I want to touch on the point that Mr. Marshall brought up. Mr. Peterson in his statement on page 3, at the bottom of the page, makes the same statement that you do:

> As acres are diverted from crops that are in surplus, farmers need profitable alternative crops.

Of course, we all agree to that. Both Mr. Marshall and I agree to the premise that we must continue research, and try to approach the zenith in production, as well as in marketing and utilization. But what I am wondering is, what is the Department of Agriculture doing in the line of research toward deciding the very serious question of what to do with diverted acres? You are saying to me, a farmer

from Minnesota, as is Mr. Marshall, that we need profitable alternative crops for the acres of corn and such that we must take out of production. Can you tell me just what profitable alternative crops are available today in southwestern Minnesota?

Dr. SHAW. I don't think we have that available. I think that my testimony will show some of the things that can be done, but in order to do them on a basis that will be profitable to the farmer, we have to develop better and less costly methods than we currently have.

What I am going to develop as I go along is that the continuing demand for meat will require a shift to production of livestock feed. That is going to be our best alternative.

PROBLEM OF SURPLUS OR DIVERTED ACRES

Mr. ANDERSEN. As you know, last year Mr. Marshall and I suggested to the Secretary that serious consideration should be given toward having the Government lease and take absolutely out of production a certain percentage of our cropland. We suggested that this should be put into a so-called bank of fertility and kept in a nonproductive status until such time as we would need the production of those acres. We had in mind the round figure of 30 million acres as being unnecessary today for production.

Now, certainly, I agree with you that you in your field must do everything possible for finding alternative crops, but to me, that does not answer the question quickly enough. We are faced with the situation of owning too much wheat and too much corn and too much cotton, gentlemen, simply because we are farming too many acres of land temporarily. And basically, I think that we are rather foolish if we produce unneeded crops at a time when all the future ahead of that particular surplus is to put it into storage and worry about it for the next few years. We create problems for ourselves by so doing.

What I would like to see you do, personally, in this research line, and I am directing this at Mr. Peterson, is to try to interest the Department of Agriculture into doing something basically sound in this matter, something along the line that Mr. Marshall and I and others have presented officially and that is determine a policy as to what to do with diverted acres.

Now, in my area, you take corn land out of production. Immediately you get into trouble with soybeans coming into production on those same acres. And I think this issue should receive the deepest consideration of the Department of Agriculture instead of receiving practically a brushoff with no valid reason by the Secretary of Agriculture. To me, there does not seem any other basic reasoning. If we do not need the production of certain commodities, why should we continue to mine our soil unnecessarily? Instead, let's put that acreage temporarily into a bank of fertility. Let us determine a real policy on how to take care of these diverted acres and our price-support program will eventually take care of itself.

Mr. MARSHALL. If you will yield to me.

Mr. ANDERSEN. Surely.

Mr. MARSHALL. I think that would mean a great saving to the taxpayers of this country. That would be far cheaper to store up the commodities in the soil than it is to raise those commodities and store them and ship them somewhere else. Why have overproduction when

it is not needed? Why not instead store fertility in the soil? It seems so sensible to me.

Mr. ANDERSEN. Such organizations as the Doane Agricultural Service agree with Mr. Marshall and me that something of this nature should be done; otherwise, until our population increases to the point where the consumption will be needed, we are going to have difficulties for years to come, Doctor.

Mr. WHITTEN. If you will yield to me, Mr. Andersen, I don't mean to differ with you and Mr. Marshall at all, and I join with your theory. The testimony of the Secretary of the Department of Agriculture shows that almost $1 billion worth of corn is not even being offered for sale on a competitive basis. I wonder whether you can start off by saying that the cutback is required as long as we do not offer the product for sale. I wonder if you are justified in calling anything surplus when you have not offered it for sale competitively.

Mr. ANDERSEN. One final word, Mr. Chairman. This subcommittee through the 12 years that you and I have been on it, Mr. Horan almost equally as long, has commenced many worthwhile things for agriculture just through such discussion as this. We helped through the years in breaking the lid, for example, that seemed to prevail over extension. We have forced the correct amount of attention to be given to Soil Conservation Service. I am proud of what this subcommittee has done in the past. As far as I am concerned, we are going to continue along that line. We feel that we are more or less specialists in this field. After all, Mr. Marshall, Mr. Whitten, Mr. Horan, and I not only have served on this subcommittee for a long period of time but most of us have an agricultural background.

What I would like to see is this: I hope that we can get down to brass tacks and commonsense and help to cure this great octopus of surpluses, not through mistaken legislation like we had last year in the line of forcing the prices down, but that we can do something really basically worthwhile. We must have a policy on what to do with these diverted acres. Also we must develop a policy as to what to do with the problem that Mr. Whitten has so well developed as to our exports. Solve those two problems, gentlemen, and I feel that we are going to cure a lot of ills as far as agriculture is concerned.

NEW CROPS FOR AGRICULTURE

Mr. MARSHALL. Mr. Chairman, we have talked a few minutes about diverted acres. I wonder if it would not be a good time for Dr. Shaw to comment upon that statement in the Secretary's Statement here, and I quote:

> As acres are diverted from crops that are in surplus, farmers need profitable alternative crops.

Dr. SHAW. We have investigations under way trying to develop new crops for our agriculture. We have castor beans; that is going to take over a few acres. We have sesame; that is going to take over a few acres. There are a few things like that. But I don't see anything in terms of new crops that is going to take over any substantial acres in the near future. We have bamboo for the Southeast and a few of those things. They are all fairly promising, but the amount of acres that is going to be taken up to grow them is very small. I think that the balance is going to come about through a

shifting in production of currently known crops, but it will requi some improvement in those crops. Again, this is related to what am going to say later in terms of the continuing demand for meat an livestock products.

Mr. MARSHALL. At the present time, Dr. Shaw, the increase o population will catch up with us and the need will be for research o the crops that we are now producing in quantity, rather than to try t find a temporary answer to this situation that we find ourselves i with excess acres at the present time.

Dr. SHAW. I think that is basically the situation in terms of ne crops as we see them at the present time. I think a number of th things that we have under study are worth developing; but I don' see anything currently that is going to take substantial acreage One hundred thousand acres would be an outside possibility on some o them. That is not going to solve our problem.

PREMIUM PAYMENTS FOR QUALITY PRODUCTS

Mr. HORAN. There is a problem there. It does not necessarily follow that the greatest production per acre means the best quality in any given commodity. You take wheat. If we were to readjus our incentive payments to give a premium to hard wheat, out our way it would solve our wheat problem. But as it is, we have a flat in centive based upon yield per acre and some of our soft wheat jus isn't as good quality. Yet, we raise 70 bushels to the acre on dry land.

There is some tendency in the direction of growing hard wheat because it is becoming increasingly difficult to sell the lower grade wheat whereas right now you can move all the hard wheat you have. You can move it at a premium today. However, you can only produce about 30 bushels to the acre. So I would like to see in this research some reference given to improvements in the quality of that which is produced. If we put the emphasis there, on the research, and have standards by which we could judge quality, that would be a step in the direction of solving the carryover of the surplus program.

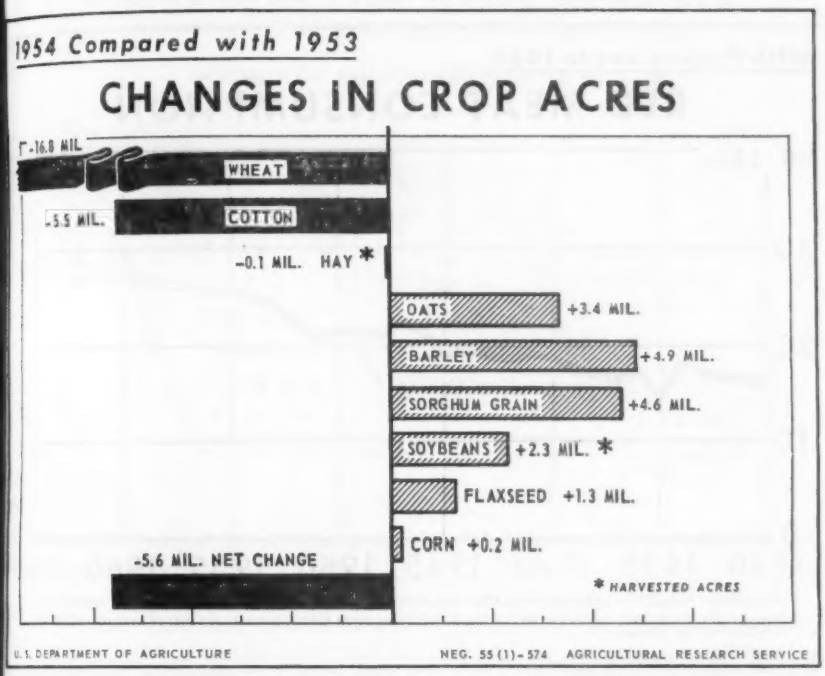
Mr. WHITTEN. Mr. Horan, you mentioned something about which I have felt sincerely through the years I have served here. In my opinion, the Department should give attention to applying a wider spread between low quality and high quality, not to reduce the overall income for the crop but to give a higher premium for the high grade and good quality and a much lower support for the inferior grade and the poor quality. It has been my observation that nearly all the losses in wool, for example, have been from a grade that never did have a market. That might be true almost entirely in the field of cotton, just as in many other commodities. Most of your losses in corn have been in the lower or questionable grades from the standpoint of storage. If there were a bigger spread with a common support, the amount of money involved being the same, I think it would cure many of our ills. But that is beyond Dr. Shaw's field, I know.

Mr. HORAN. It is encouraging that farmers themselves are talking in that direction now. Out my way they are.

Dr. SHAW. There is no question but what if we can produce the products in quality that the consumers are demanding, we would have a lot less trouble with surpluses than we are currently having.

CHANGES IN CROP ACRES

A shift in acreage has already occurred in 1954 over 1953. The following chart reflects these changes:



Dr. SHAW. Associated with the supply situation and with the allotments, there has been a reduction in wheat and cotton acreage of some 21 million acres; and associated with it was an increase of about 13 million acres in feed grains and about 4 million acres in soybeans and flaxseed. In the 1 year, a very marked and substantial shift in production——

Mr. ANDERSEN. From my viewpoint as a producer that shift has not helped me a nickel's worth; it has hurt me.

Mr. WHITTEN. I might point out the other factor insofar as the world production of cotton is concerned. As cotton acreage came down in the United States, it was increased fully as much in foreign countries. That was true last year and is in prospect for this year. So it has a twofold effect: You reduce the foreign-market potential, and then as you cut it down here, as Mr. Andersen pointed out, you add to your problems in the field his area is primarily interested in.

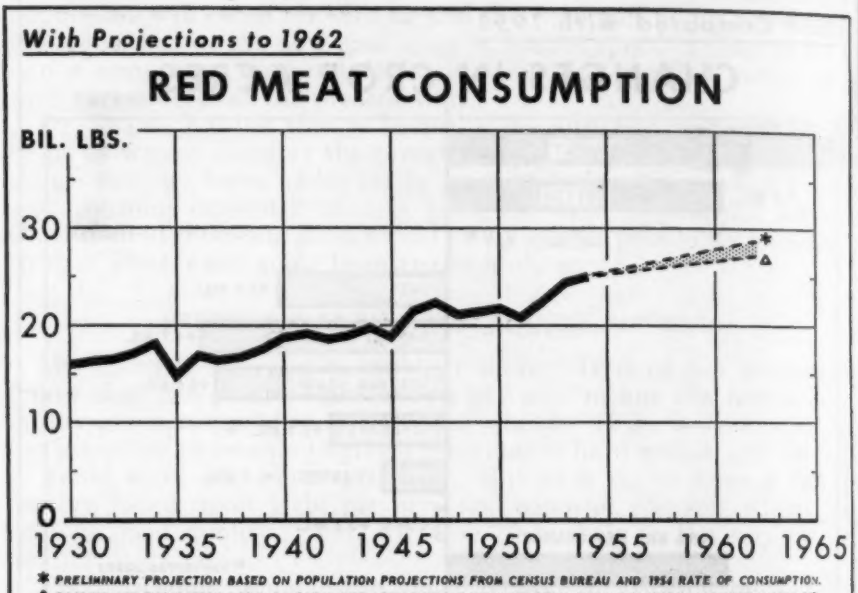
Dr. SHAW. Certainly, in terms of our supplies of products and of our need, this is a large shift to feed grains. It was not in the direction that we would like to have had it go to bring about balance. It was much too great.

In considering what the shifts ought to be and what possibilities we would have of making shifts that may be profitable to farmers, I think the greatest single factor that has an influence on the use of substantial acres of land is the meat consumption of the United States population.

RED MEAT CONSUMPTION

I have shown in this chart the red meat consumption from 1930 to 1954 and have projected it to 1962.

(The chart referred to follows:)


With Projections to 1962
RED MEAT CONSUMPTION
BIL. LBS.
30
20
10
0
1930 1935 1940 1945 1950 1955 1960 1965
* PRELIMINARY PROJECTION BASED ON POPULATION PROJECTIONS FROM CENSUS BUREAU AND 1954 RATE OF CONSUMPTION.
△ PRELIMINARY PROJECTION BASED ON POPULATION PROJECTIONS FROM CENSUS BUREAU AND 1952-54 AVERAGE RATES OF CONSUMPTION OF RED MEAT.
U. S. DEPARTMENT OF AGRICULTURE
NEG. 55 (1)-375 AGRICULTURAL RESEARCH SERVICE

Dr. SHAW. The chart shows that in 1930, the Nation was consuming about 16 billion pounds of red meat, and that by 1954, consumption of red meat increased to about 2.5 billion pounds.

The lower projection is on the basis that per capita consumption of meat would be equal to the average of the past 3 years (1952, 1953, 1954)—a per capita consumption of 151 pounds of red meat. The upper projection is based on an assumption of per capita consumption of 156 pounds of red meat, which was the actual consumption in 1954.

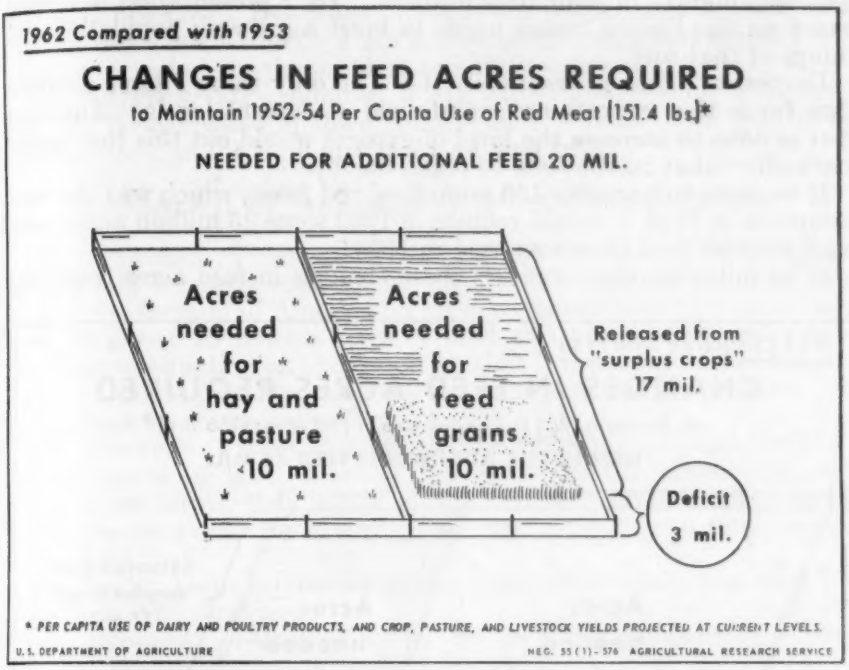
Now, if we were to have per capita consumption at the average of the last 3 years, or the 151 pounds, by 1962 it would require 27 billion pounds of red meat. That is roughly 10 percent more than was actually consumed in 1954. This would require about 3½ million more cattle, about 2 million more sheep, and about 9 million more hogs to supply the increased meat that would be needed by 1962.

If you take the upper level or 156 pounds of red meat per capita, you would have to add still another 3½ million head of cattle, another million sheep and another million hogs to provide for the needs in 1962.

CHANGES IN FEED ACRES REQUIRED

The feed for that livestock would require 20 million acres more to produce the feed based on the 151 pounds per capita consumption (1952 to 1954 average) over the land that was used in 1953.

(The following chart reflects these changes in feed acres required:)


1962 Compared with 1953
CHANGES IN FEED ACRES REQUIRED
to Maintain 1952-54 Per Capita Use of Red Meat (151.4 lbs.)*
NEEDED FOR ADDITIONAL FEED 20 MIL.
Acres needed for hay and pasture 10 mil.
Acres needed for feed grains 10 mil.
Released from "surplus crops" 17 mil.
Deficit 3 mil.
* PER CAPITA USE OF DAIRY AND POULTRY PRODUCTS, AND CROP, PASTURE, AND LIVESTOCK YIELDS PROJECTED AT CURRENT LEVELS.
U.S. DEPARTMENT OF AGRICULTURE
NEG. 55(1)-576 AGRICULTURAL RESEARCH SERVICE

Dr. SHAW. In other words, it would require 10 million more acres of feed grains than was used in 1953 and 10 million more acres of hay and pasture than we used in 1953. This is a 3 million acre smaller increase in feed grains than actually took place between 1953 and 1954. There was no shift to hay and pasture going from 1953 to 1954. It would require a 10 million acre shift in that direction by 1962.

Now then, if that were done, it would provide a use for the 17 million acres that would not be needed in 1962, to grow wheat and cotton, on the basis again of current exports and domestic market. We would have an indicated deficit of some 3 million acres. Well, about all we can say for that deficit, since my assumptions are based on present yields per acre, is that that would give us some margin of flexibility for yield increases between now and 1962. So what I am saying is roughly this: If per capita consumption of meat would continue in the future at this average of 1952 to 1954, it would take until about 1962 to bring production into balance with demand. On the other hand——

Mr. MARSHALL. What you are also saying is that it would be a wise thing to add the fertility, not only maintain it, but add to fertility what we do not need at the present time to make up the deficiency we might have in 1962.

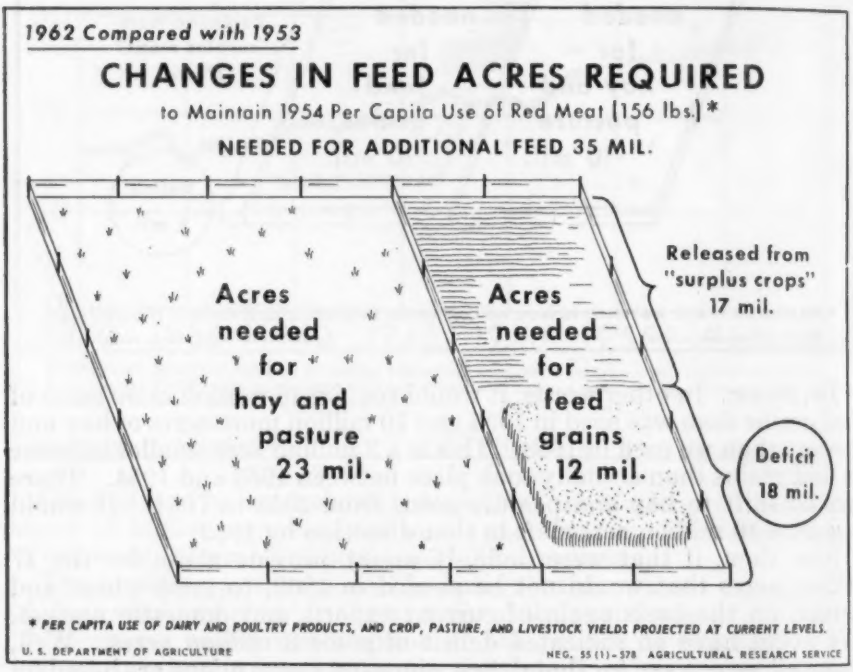
Mr. WHITTEN. Dr. Shaw, I am thoroughly convinced that present shortsighted governmental policies are gradually pulling the farmer back to the domestic market. In other words, the policy of holding our commodity at a price level which reflects our 13 freight rate increases since World War II, our high labor costs, high machinery costs, and other things, will gradually take away our foreign markets.

Now, you do not mean to underwrite any such contraction to the domestic market in your presentation. Your presentation is largely based on the United States needs to meet a growing population and things of that sort.

Dr. SHAW. That is practically it. The only thing I have assumed thus far is that exports are maintained at current levels. Anything that is done to increase the level of exports would cut this time down markedly—that is, the time to reach balance.

If we were to consume 156 pounds of red meat, which was the consumption in 1954, it would require in 1962 some 35 million acres more land to grow feed than was used in 1953.

(The following chart reflects these changes in feed acres required:)


1962 Compared with 1953
CHANGES IN FEED ACRES REQUIRED
to Maintain 1954 Per Capita Use of Red Meat [156 lbs.] *
NEEDED FOR ADDITIONAL FEED 35 MIL.
Acres needed for hay and pasture 23 mil.
Acres needed for feed grains 12 mil.
Released from "surplus crops" 17 mil.
Deficit 18 mil.
* PER CAPITA USE OF DAIRY AND POULTRY PRODUCTS, AND CROP, PASTURE, AND LIVESTOCK YIELDS PROJECTED AT CURRENT LEVELS.
U. S. DEPARTMENT OF AGRICULTURE
NEG. 55 (1)-578 AGRICULTURAL RESEARCH SERVICE

Dr. SHAW. That again would provide opportunity for the use of the 17 million acres that were used for growing wheat and cotton in 1953 that would not be needed in 1962. But it would indicate a deficit this time of roughly 18 million acres. In other words, the small difference in meat consumption—from 151 pounds per capita, which was the average 1952 to 1954, to 156 pounds, which was the average per capita consumption in 1954—would take an extra 15 million acres of feed to provide that meat.

The surplus of 17 million acres that has to be shifted from wheat and cotton, allows for 5 million acres more wheat and cotton in 1962 than was actually grown in 1954. It allows for 14 million acres more wheat and cotton than is provided in the 1955 allotments.

Mr. ANDERSEN. This is all an evolution which will come into being because of the fact that we will have at least 2.6 million more human beings each year in this Nation from now on, and on an ascending curve. Evidence was given to us last year that by 1970 we would

need the production from 115 million additional acres of land above that we have now. But what interests me particularly is the conditions in this year of 1955. I am not so much concerned about 1962. I am concerned about the problem presently facing us.

Mr. WHITTEN. Mr. Andersen, if Mr. Morse's suggestion is followed that the farmer work in town for the next 5 years, then maybe he could go back on the farm and make a living later.

WITHDRAWAL OF LAND FROM AGRICULTURAL PRODUCTION

Mr. ANDERSEN. There is still a better cure for that. If the Department would seriously consider Mr. Marshall's and my proposal that we pay the farmers of America on an average of about $10 per acre of land for about 30 million acres of land and temporarily retire that land from production on the condition that it is put into a soil fertility bank, we would go a long way toward taking care of the problem. It would show its immediate effects in 1955.

Mr. WHITTEN. I went through 1932 and that period; that is when I started practicing law. I found that, when the insurance companies foreclosed on farms, they would always sell them to start over again. So 1962 is somewhat the same. If we can just get by to 1962, we will be all right.

Dr. SHAW. I am interested in the farm situation in the next few years, too, Mr. Andersen.

Mr. ANDERSEN. I know you are. So am I, but not as much as compared to the present.

SHIFTING LAND TO FORAGE PRODUCTION

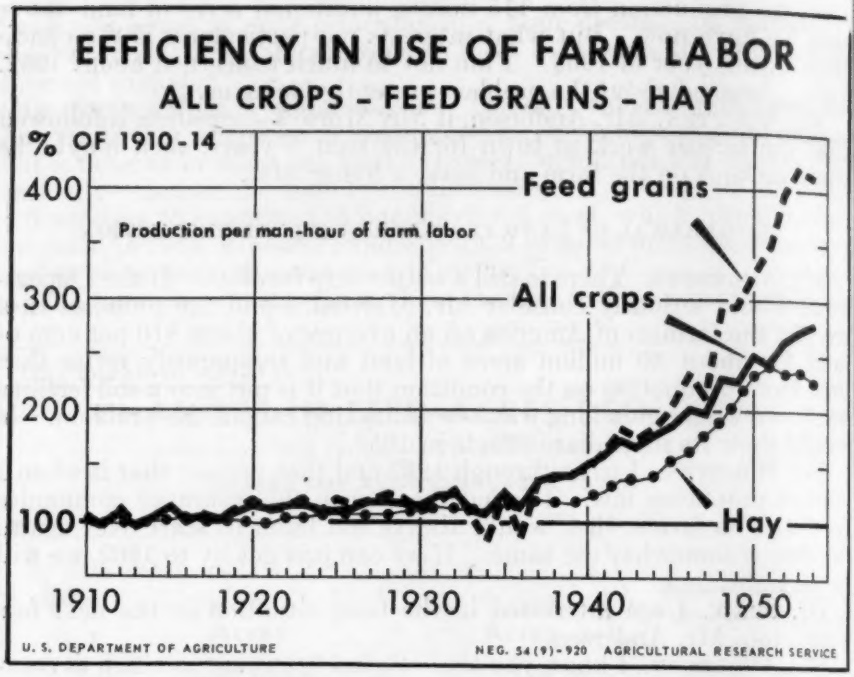
Dr. SHAW. The only thing I was trying to do was to indicate what we are likely to be up against with current programs and when we are likely to achieve a balance. You can look at the apparent deficit of 18 million acres in two ways: One, it would provide considerable opportunity for yield increases between now and 1962 or, two, what is more likely if yields stay what they are, it would cut down the period required to reach balance about in half. In other words, instead of taking to 1962 to come to balance, only half that time, about 3½ years, would be required. Probably it will be a combination of the two, some little yield increase and a shorter period. We may be in balance by 1959 or 1960.

Shifting of land into forage to meet livestock demands can only be made by the farmers if it is profitable to them.

EFFICIENCY IN USE OF FARM LABOR

ALL CROPS, FEED GRAINS, AND HAY

The increase in efficiency in use of farm labor in producing all crops, feed grains, and hay over the years is reflected in the following chart:



Dr. SHAW. In growing hay, as compared with other crops, you will notice that we are now producing about twice as much hay per man-hour of farm labor, as we did back here in 1910. On the other hand, we are now producing four times as much feed grain for an hour of farm labor as we did in 1910. In other words, the improvements that we have made in forage production have only been about half as great as they have been in producing the feed grains. If we are going to encourage these shifts to forage we need to increase the efficiency of producing hay very materially over present efficiencies.

REDUCTIONS IN FARM LABOR

Mr. WHITTEN. That is all very interesting, Dr. Shaw, but that statement has to do with a farm owner. The farmworker somehow seems to get lost in the rush. Looking at the fellow who works on the farm, he is also a farmer. So if it took two men on the farm to do the work and pressures get so great that the farmer has to use machinery and only one man, where does the other farm laborer go? What provision is made for him? I realize you cannot answer that, but I am trying to point out that thousands of farm families, due to this cotton acreage reduction, have no place to farm and no job, and many of them have been put out of their homes.

Now, I am merely pointing out that, as you try to meet your farm pressures of higher and higher costs by reducing the number of farmworkers, you eliminate the means of livelihood for those workers. So it is not a simple problem. It is a thing of 2 or 3 different parts, if I make the point.

Dr. SHAW. I think your point is clear—that as we increase efficiency some of the people are taken out of farming.

A farmer 30 years ago was producing about enough food and fiber for 9 people and today he is producing enough food and fiber for about 19 people. That has caused continually some temporary dislocation. But the fact that we have been able to do this in agriculture thereby releasing men to industry is, in my opinion, what has made it possible for us to have all of the other things we have that go to make up our high standard of living.

Mr. WHITTEN. I rather agree with you. However, I think that the farm net income, the money left over that he can use to put back into the land, is going to be the factor that will preserve this country for future generations. Generally, the farmer's income does not leave him enough to put some back into the land to maintain fertility. If his prices remain such that he has to constantly draw against the natural resources bank, we will eventually end up in the position of China, where it takes 19 to feed one in the city. The overall farm income is the decisive factor in what will be done to take care of our land which, after all, is the basis of prosperity.

REDUCING PRODUCTION COSTS THROUGH RESEARCH

Dr. SHAW. If we can increase the efficiency of farming through research, and lower the costs of production, we are going to increase the farmer's net.

Mr. WHITTEN. That would be true if you had any control over increases in freight rate, increases in industrial labor costs, and increases on consumer demand for prepackaging and frozen foods. But, as you try to increase the farmer's efficiency, the cost of everything which he has to have to operate will cause costs to go up faster than his increased production. The trends that we have just seen on Mr. Wells charts indicate that your statement is not entirely correct, due to the fact that the farm costs are constantly increasing.

Dr. SHAW. It is very true that those other costs may go up faster than we can reduce costs of production, but the farmer will be in a lot better position if we can reduce his costs than he would be if we do not.

Mr. WHITTEN. You give some hopes of living with the problem. But that factor is one that is not being pointed out.

Dr. SHAW. The farmer would be in a far more hopeless situation without our efforts than he would be if we can reduce his costs.

Now, certainly, in terms of the efforts that have been made in marketing—marketing research—I do not know that they could show that they have done anything to reduce that spread. I think they could show that they may have prevented it from going still higher, but your point is valid, that those prices may outrace our efforts in reducing production costs.

Mr. ANDERSEN. That is probably why some of us get a little impatient. A lot of this is very slow and necessarily so.

Dr. SHAW. It is slow; it is too slow.

Mr. MARSHALL. Do you know roughly what percentage of your research funds have gone to feed grains and what percentage have gone to forage crops?

Dr. SHAW. Yes, I can give you those figures. I don't have them right here.

I will put them in the record. I have those figures.

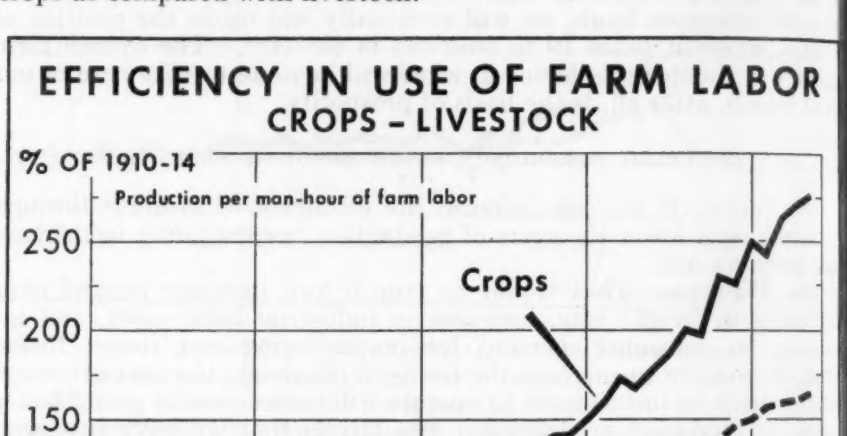
(The following information was supplied later.)

Of the total 1955 funds available for research by Department agencies, 7.5 per cent is allocated for feed grains and 4.5 percent for forage crops.

EFFICIENCY IN USE OF FARM LABOR

CROPS COMPARED WITH LIVESTOCK

Dr. SHAW. In addition to the lower rate of improvement in efficiency of growing hay as compared to feed grains, we have also the situation that in livestock production, we have not made nearly as much increase in efficiency in livestock as we have in crops. The following chart compares efficiency in use of farm labor in producing crops as compared with livestock:



Dr. SHAW. In the case of crops, a man-hour of farm labor is now producing about 175 percent more crops than it was back in 1910. We are producing only about 65 percent more livestock products from a man-hour of labor as we did back in the 1910 period.

It seems to me there are a good many opportunities to reduce the cost of producing livestock and to increase the efficiency. One very important item is the current losses we are suffeing from diseases and parasites in livestock. It is estimated that the losses from diseases and parasites are about $2 billion annually. There is a good opportunity to cut those losses down and thereby decrease the cost of production. Also lowering the costs of feed through forage, more efficient feeding methods, and greater output per animal through breeding can reduce costs.

NEED FOR DECREASING FARM PRODUCTION EXPENSES

We need to reduce production costs throughout agriculture. And looking at the increased production by 1962 that has been reflected on these charts that I have used if we could produce that increased production at the same cost per unit that we are now producing our product, we would increase the farmers' net about $500 million a year, assuming current prices. That would be about a 4 percent increase in the farmers' net income.

But, on the other hand, again assuming current prices of agricultural products, if we could decrease the cost per unit of production by 4 percent, we would increase the farmers' net by a billion and a half dollars, which would be roughly 11 percent increase in net income.

Now if, as Mr. Whitten has said, the other costs go up at an equal or greater rate, they would cancel out this improvement.

Mr. MARSHALL. Dr. Shaw, the things you are saying, I don't think any member of this committee would quarrel with as far as making the profit on farms is concerned. If you cut the costs, assuming that everything else stayed about the same, you would make a profit.

DISSEMINATING RESULTS OF RESEARCH

Now, do you know what the Department is doing over there with the benefit of your research? What direction are they giving it? We recognize you are doing these things in research, but what is the Department of Agriculture doing to make use of your findings in research along these lines?

Dr. SHAW. I am not sure that I interpret your question, Mr. Marshall.

Mr. MARSHALL. You are bringing out here some very pertinent facts concerning the matter of making a profit on a farm. You are bringing out the fact that if you can show that you can cut the costs which you have shown through research, what is the Department doing to put into effect some of those, that information that you have gathered in research?

Dr. SHAW. The Department, in cooperation with the colleges through the Extension Service, is trying to carry any information that we or the States develop directly to the farmer and bring the information to him as rapidly as possible.

Certainly, that effort can stand speeding up. There is a great time lag, greater than there should be between the development of our findings and their actual application by farmers. I think we are making progress in that direction all along and the Cooperative Extension Service is moving in that direction.

INCREASED COSTS OF MARKETING

Mr. WHITTEN. Dr. Shaw, if Mr. Marshall will permit me, I wish to clarify again what I am shooting at. I recognize your field and do think you do a splendid job under your Department. But where the records show, as they have here today, that the farmers' share of the consumer dollar has gone down from 54 percent in 1946 to only 43 percent of the consumers' dollar, that the spread has increased from the farmer to the consumer by 85 percent since 1945, it makes me wonder if perhaps we can ever handle the problem working only on

the end that you work with, the 43-percent end. There are bound to be certain basic limitations on how far you can reduce the farmers' costs. So it strikes me that now as never before those dealing with the overall problem we need to begin to look at and tell the American people about the 57-percent end, which has gotten to be far beyond the whole segment that is tied to the farmer.

Dr. SHAW. Certainly, I agree that we should do everything possible in that 57 percent portion—the marketing portion—to increase efficiency and give the farmers a higher percentage of the consumers' dollar. I agree with you wholeheartedly on that. But I must say in frankness that my own opinion is that we are going to do more for the farmers this way than the other way.

Mr. WHITTEN. I can't differ with you. At least we are beginning to see the consumer and see that his dollar is not going to the farmer, who has been taking the load in most of the speeches that I have read. It is almost unbelievable to know that some farm commodities sent from California cost more from the time they reach the Hudson River to the consumer than it costs to produce, ship, and deliver them to the Hudson River. That kind of information is available in the Department, but Mr. Morse did not point that out in his speech. I have not seen it included in any other speech by top-level people in the Department.

Mr. MARSHALL. Dr. Shaw, we have this past year had a pretty good example of falling farm prices with the cost of food remaining right up where it was. We have also had comments made that the price of food has priced itself out of the market. Now, is the farmer, going to be expected to absorb all of the shock of lowering prices? Falling farm prices have not had any effect to any great extent upon food prices. They are staying right up there.

Mr. ANDERSEN. May I suggest that we are getting out of Dr. Shaw's field? He is in research, relative to production, are you not, Dr. Shaw?

Dr. SHAW. Production and utilization research. Mr. Wells is responsible for marketing research—he will appear before you later.

Mr. ANDERSEN. We should ask Mr. Wells about that point.

Mr. WHITTEN. Dr. Shaw makes such a fine presentation of his work, but he is only dealing with 43 percent of it. There is another 57 percent that we will have to look to for the cure.

Dr. SHAW. I am still going to say that, frankly, and sincerely, I believe we are going to do more for the farmer here than will be done in marketing.

Mr. WHITTEN. I will say it this way: there is little chance of changing the laws under which this 57 percent has been built up. Also, a big part of it may be transportation and the consumers demand for washed carrots and cellophane bags and frozen food. It is all right if they demand it. But it would be well to let them know what part of the final price is that item of cost. But behind that is the increased cost that comes from American laws governing labor unions, minimum wages—and I am not condemning those things as such. It looks like they are going to continue that way and it is a factor that must be considered in serving the American people, to let them know where their money goes.

Dr. SHAW. I agree fully with you and I think that the work that Mr. Wells has under his direction on marketing research is aimed at getting the kind of information that you are talking about.

PROBLEM OF SURPLUS ACRES

Mr. ANDERSEN. Doctor, Mr. Whitten's comments make me all the more convinced that until we balance farm production with what is needed, through such programs as Mr. Marshall and I recommend and are trying to obtain consideration for, we will always be in difficulties. You can do all you possibly can in your line and you are doing a fine job in research, but in the final analysis, if there is a carload of eggs too much on the market or a few carloads too much of wheat or corn in 1 day, gentlemen, that surplus will practically set the price of the markets throughout the United States. That is why I hold to the theory that basically we should try to solve this question through retiring some of our land temporarily out of production. Research will help, but we need drastic control of production temporarily until consumption catches up with production.

Mr. MARSHALL. We want to have an agricultural program that will continue to show the result of Dr. Shaw's work.

MORE EFFICIENT LIVESTOCK PRODUCTION

Dr. SHAW. We feel that in light of the people's demand for livestock products and meat, they want more all the time, and along with the increase in population, we can probably do more in our research work to help in balancing agricultural supplies with demand by reducing the cost of producing livestock than by any other thing that we can do. It would move things in the right direction, both from the standpoint of what people want and also from the standpoint that this increased forage will contribute to building up the fertility of our soils.

Mr. WHITTEN. Doctor, you have to believe that and I have to work with you. We can't afford to believe anything else. Yet, you and I know that, if you reduce the cost of that beef at the farm level by 3 cents a pound less on the foot, under our complex protection for various sections of the population from the farmer to the consumer, there is no reason for me or you either to believe that the consumer would pay one penny less.

Dr. SHAW. No, but if the retail price remains the same, and we can do something that will decrease the farmer's cost to produce it—by cheaper feed, by controlling of parasites and the diseases, and so on—it seems to me the farmer will be in a better position.

Mr. WHITTEN. It will help him some. I am questioning whether it will help him as much as it should. And that is no fault of yours or mine.

1956 BUDGET INCREASES

Dr. SHAW. In terms of the increase that we have in the budget for research, we are putting our principal effort on this area of livestock cost reduction. Over 60 percent of the increase is for this area of work and the major part of the balance is for emergency insect and disease research problems. We have two small items—one on watershed hydrology, which is needed in connection with the watershed development program the Department has underway; the other is on cotton utilization.

I am through, actually. If you desire, we can start with Dr. Moseman on crop research.

Mr. WHITTEN. In connection with what I have in mind, I will want to have you here so that we can develop in the record the bases of selection of projects and what efforts are made by the Department to sift them out and put the emphasis where it should be. I also want to discuss the procedural operations, with which some of us are familiar and new members have not had a chance to learn. It might be well to go into that with you, after which we will reach Dr. Moseman.

Dr. SHAW. Shall I bring him with me at the start of the hearings tomorrow?

Mr. WHITTEN. Yes.

WEDNESDAY, FEBRUARY 2, 1955.

Mr. WHITTEN. The committee will come to order.

Are there any questions of a general nature at this time before we go into a description by Dr. Shaw of just how this work is handled?

RESEARCH LINE PROJECTS

If not, Dr. Shaw, you have approximately how many research projects in round numbers?

Dr. SHAW. The line projects—the finest breakdown we have—numbers 3,200 in the Department as a whole. Of these, 2,256 are in the Agricultural Research Service.

Mr. WHITTEN. As I perhaps pointed out earlier, formerly the committee was advised of each of those projects and we made an effort to go over them as best we could each year.

With time, we thought that perhaps it might be just as well to rely on the review of the various advisory committees, feeling that the competition between research needs would serve as a means to see that efforts were put at the best possible places, which would result in discontinuing of work that was showing relatively little progress.

In recent years, we have had rather large increases in the funds for research and, since it has been quite some time since we have had the list before the committee, I feel we should make a closer review of projects this year. May I say, it never was my intention when we surrendered our customary responsibilities to neglect to have a list submitted to us, and I feel sure that hereafter a list should be submitted. I hope we can get by with your tables as you have them here today for the moment, but hereafter I think it would be well to have the complete list annually, because my experience shows that, in spite of all your efforts and our efforts and the efforts of the advisory committees, it is difficult to prevent duplication and to move on from work where you get less benefits to work that is more necessary at the moment.

DISTRIBUTION OF INFORMATION ON RESEARCH LINE PROJECTS

Now, the other thing that disturbs me is this: I find that you have to bring these files down from your own office. From that I take it that there is no official list issued; certainly you do not even have one to submit to the committee. So apparently there is no distribution of what projects you have in existence. I would take that to be a

weakness, because a listing of these projects should certainly be in the hands of every State experiment station. They should be in the hands of everybody concerned with research because, if you are doing certain work in one place, then you would not have to do it elsewhere. And probably it would keep a lot of people happy if they could see just what you are doing.

So I am disturbed to find that you have just one file.

I have the highest confidence in you, Dr. Shaw, but if we ever got the wrong man here, he could have 50 percent duplicated and nobody would be the wiser. So I think there should be a wide distribution of the line projects that you have. That might let somebody write you about what is happening in each field and you could devote their time and money to something else that is pressing.

With that comment, I wish you would tell the committee—and some of us are new here—how a project is first started. You might tell from what sources that suggestion comes, how it finally becomes one of the line projects. And you might add to that any of the other day-to-day type of operations that you have on this week.

LISTING OF LINE PROJECTS

Dr. SHAW. I will be happy to do that, Mr. Chairman.

Could I speak first, before I go into the structure and handling of our projects to the reason why we do not have a list?

The reason we do not have a list of projects is that it would be out of date daily. In other words, projects are being added to the file and projects are being completed every day. Therefore, any list that you would prepare would be out of date the next day.

In lieu of having a list, and to meet some of the needs you indicated were important, we prepare monthly a summary of all the new projects that have been initiated in that month; and all of the projects that were discontinued in that month. We do send all those lists to all of the experiment stations. We have not made it a practice of distributing the list outside of the experiment stations, but anyone who has had a desire to have such information has had it furnished to him.

So we are trying to do, I think, Mr. Chairman, some of the things you have in mind. The only reason we have never prepared a master list is because it would be out of date so very quickly. A large number of these turn over each year and part of that is occurring every day throughout the year.

PROJECT SYSTEM AND STRUCTURE

Now, if I may, I would like to tell you about our overall project system and structure before we get right down to the line projects.

FINANCIAL PROJECTS

First of all, we begin with what we call the financial project. It is the project that appears in our House notes and in the budget. We have six of them for research in the Agricultural Research Service budget this year. They include crops research, livestock research, farm and land management research, human nutrition and home

economics research, administration of payments to States and Territorial research, and utilization research. Those are the projects that are broad in coverage. They cover the work, as interpreted by the Department, which Congress intended to have conducted in the broad field of effort. Our overall objectives are pointed out in the financial project, as well as the overall plan of work for the research branches in that field. It forms more or less of a charter for the work in that area of research. These projects are approved by the Secretary of Agriculture.

A financial project does not get down to any specific lines of work but covers a broad field, such as crops research, which is broken down into the three research branches—field crops, horticulatural corps, and entomology—which do work under it.

WORK PROJECTS

In going from these branch or budget activity projects we have, as the next breakdown in our project system, what we call work projects and those, too, are rather broad in coverage. The field crops project is broken down into work projects essentially on a commodity basis—1 on barley, 1 on corn, 1 on wheat, 1 on oats, 1 on alfalfa, and so on, covering the various crops within the field crops area. Again the work project is rather broad in coverage. But it does outline our objectives on corn production research, or oats production, or whatever the commodity. It gives in general the lines of investigation that we intend to pursue.

It is primarily a device for fixing responsibility in project leaders for an area of work which they are to supervise, and for which they are going to be responsible and will report on the progress of the work.

LINE PROJECTS

However, the work project is not at the level of the actual day-to-day conduct of research. So that under a work project, say on wheat, or barley, or any of the other work projects, we do have what we call line projects which are the specific fields of research that we are investigating from day to day.

The line project does outline rather in detail what the objective will be. For instance, we may have a line project to study race 15B stem rust of wheat. It will outline our approach to the problem, whether it will be by breeding or whether we will try to use other methods of disease control and what our specific objectives would be in that particular case. The objective will be to breed a variety of wheat that is resistant to this 15B stem rust. It would indicate the extent of the activity, and the number of field stations where we are going to be conducting this research. It would be approved for only a limited time.

TIME LIMIT ON LINE PROJECTS

The line projects may be in existence for anything up to 5 years. Before the initial approval, we ask those recommending the project to estimate the time in which they expect the work will be completed. It may be 1 year; it may be 2 years; it may be 3 years, or it may be 4. It may even be 5 years, or this estimate may indicate that it will take longer than 5. But we require that every project be reviewed

at least once every 5 years. For that reason, we have automatically put a termination date on each and every project of 5 years unless they are due to be completed earlier. At the conclusion of 5 years, we review the project and if there is need for its continuance, we can determine that.

If it needs to be modified in light of the research that we have conducted up to that time, we can determine that and revise it.

FORMULATION OF LINE PROJECTS

Now, I think I should tell you something about how a given line project is developed and how it is reviewed before the approval.

First of all, within our field crops research branch, for example, we have a project leader on oats. It is his responsibility as our chief specialist on oats to determine what lines of research would appear to be needed in connection with oats production. In the determination of those lines, he has behind him the advice of many, many groups. Our advisory committees are one group from which we get advice, another is the Extension Service. We also get advice from many individual farmers, and so on, as to what the problems are. Out of all that advice he makes a determination of what he believes to be the number of lines of investigation that should be followed within the amount of funds that we have available for that work. Working with the research men under him, he will develop a specific line of research, a line project that he thinks should be carried out and which will contribute to the improvement of oats. He will then discuss it with his branch chief and if the branch chief and he are in agreement that the project should be activated, the branch chief will then recommend to the program director, the Research Director in my office, that this research project be approved.

APPROVAL OF LINE PROJECTS

At that stage of the approval, the line project is prepared in several copies and copies of the project are sent to any other unit within the Department that is likely to have any work related to oats or any interest in oats in our utilization branches, in the entomology branch or anywhere in the Department where there is likely to be any interest or any project related to this particular one.

They are asked to look at the project from the standpoint of: (1) Is it duplicating any of the work they are doing; (2) is it related to any of the work that they are doing so that if this project is carried out, they can determine whether concurrent work ought to be done by them to make a complete research program. If that is the determination, the next question is, has cooperation been provided for between the two units?

The comments from each one of those other branches where this project has been reviewed are sent back to the originating branch chief who prepared the project. Copies of those comments come to my office for the review of the Research Director in my office.

In light of the comments, the branch chief and the project leader who is in charge of this project will revise the project as needed in light of all the comments. If they cannot make the revisions in the project which will take care of all the comments that have come from

other agencies, then we require that the case be referred to my office for arbitration, if necessary, between any of the units.

Finally, after having that review, the Research Director in my office, under delegation of authority to approve line projects, determines whether the project should be approved or whether it should be turned down.

CRITERIA FOR THE APPROVAL OF LINE PROJECTS

I would like to read in terms of the Research Director's responsibility in approving line projects what the delegation of authority involves. I am reading from the document that delegated authority to the Research Director. It says that he will have full responsibility for the analysis of the proposed research line projects to make the following determinations:

One, that the research is needed in the national interest and is in line with broad program objectives;

Two, that the research is within the scope of the work project of which it is a part;

Three, that the research objectives and plans for work are sound;

Four, that adequate personnel and facilities are available for prosecution of the project;

Five, that the project is appropriately integrated with other work of the Bureau or Agency;

Six, that the project is integrated with related work of other department bureaus and agencies, and provision is made as needed for joint or cooperative planning in carrying out the research; and

Seven, that the project, in light of the best information available, does not unnecessarily duplicate work of other department agencies, or the work of other Federal, State, or private agencies whose findings are publically available.

The Research Director makes those determinations in connection with each project that he approves. Then, following the approval of the project, there is, of course, followup at various levels of supervisory responsibility and the project leader himself follows the project closely, not on a day to day basis but certainly at intervals more frequent than annually.

PROGRESS REPORTS ON PROJECTS

We require a progress report annually on the basis of work projects which for example, would be on corn or wheat or barley. The instructions for preparing the progress report on an annual basis to our office is that the branch chief shall report progress on any line of work that has made significant accomplishments toward its objective in that year. We have not required that there be a formal report to my office on each line project each year. However, the supervisor of the line project, the man who is in charge of each work project, requires reports on the line projects at least annually. Most of them require reports more frequent than annually.

We can observe in terms of our progress reports whether or not we feel the work should be continued to the time for which it had been approved; and, as mentioned earlier, we will review every line project at least as often as every 5 years.

Mr. WHITTEN. Thank you, Doctor, that is a very excellent presentation of the matter. Certainly it is clear that very special efforts are made to check each of these projects.

INCREASES FOR RESEARCH

Mr. WHITTEN. Now, you have had substantial increases in research funds the last several years. What was the increase for the current fiscal year?

Dr. SHAW. For the current fiscal year there was around $12 million total increase for research; $5,700,000 of it was for payments to State agricultural experiment stations and the rest was for research by the Department agencies.

AVAILABILITY OF PERSONNEL

Mr. WHITTEN. There are two questions that arise when those substantial increases are made. One of them is whether, in the short period of time involved, trained personnel are available. You will recall that we went through 1 year when we strengthened the marketing research funds to the point that apparently it was difficult to find and train sufficient specialists. Some of these specialists were that in name only because the civil service made them that for the job. It was certainly apparent that in the first year or two many specialists had not had sufficient experience, though perhaps they were the only ones available.

In connection with this substantial increase last year, what was your experience in getting the right kind of people to do the job? How many new people were employed to carry out the work?

Dr. SHAW. I think we have had very good success in recruiting staff that was needed for the increases. We had a requirement in the Agricultural Research Service for 304 new positions in terms of our total increases of $2,450,000. As of January 10, 1955, 229 of those have been employed. There are active negotiations looking toward rather quick employment of 23. As of January 10, there were 52 others that had not been appointed. That is about in line with our expectations in terms of employment under these projects.

We think that we have been able to obtain very good candidates for the work. A high percentage of them—I do not have the exact percentage—are doctors' degree students.

LINE PROJECT DELETIONS AND ADDITIONS

Mr. WHITTEN. In the absence of the increase voted last year, any new project that you have gone into for the current fiscal year will require the dropping of projects of equal cost. How does your dropping of projects for the current fiscal year compare with the projects discontinued in the preceding several years? Do you have any comparison that you could give us?

Dr. SHAW. In the calendar year from January 1, 1954, to December 31, 1954, we have added 406 new line projects. The 406 new projects contain 180 revisions of old projects. We have discontinued 380 line projects in that year. I do not have the comparison with past fiscal years, but it is of that same order of magnitude. You remember I

said we had around 2,250 line projects. About 20 percent of our program turns over annually.

EFFECT OF RESEARCH APPROPRIATION INCREASES ON LINE PROJECTS

Mr. WHITTEN. You might put such tables as would reflect this in the record at this point. The point I was trying to develop is whether, with the additional funds, you dropped as many projects as in previous years, or whether these additional funds were used for additional new projects with a relatively larger continuation of existing projects.

(The table referred to follows:)

Calendar year	New line projects	Line projects discontinued	Calendar year	New line projects	Line projects discontinued
1950 [1]	566	514	1953 [1]	829	970
1951 [1]	295	527	1954	406	380
1952 [1]	535	596			

[1] Not fully adjusted for comparability with the 1954 ARS organization structure. Such adjustments however would have a relatively small effect on the numbers shown.

NOTE.—There is no way of providing a statistical picture from which inferences can be accurately drawn regarding the separate effect of fund increases on additions and discontinuances of line projects in past years. The large revision of projects in 1953 and the reorganization of the department in 1954 undoubtedly influenced the number of project actions in 1954. Following are some of the more important inseparable factors that have influenced the totals shown:

1. Administrative decisions to shift emphasis on content of program due to special circumstances such as a national emergency.
2. Administrative decisions to document research in smaller segments capable of early completion or the converse; decisions to document research in fewer and larger segments of longer duration but subject to frequent review and revision.
3. Variation in the basic character of different fields of research that necessitate differences in the scope and duration of projects.
4. Increases and decreases in funds.

Dr. SHAW. I don't know that I can prove it, Mr. Chairman, but I would think that the increase has not had any influence on our dropping projects that were coming to completion. In other words, even with the increase, we are still in the situation where the demand for us to do work is far greater than our ability to do the work.

EFFECT OF INCREASED APPROPRIATIONS ON SELECTION OF RESEARCH PROJECTS

Mr. WHITTEN. Another problem that we have when we start making substantial increases is that it is perhaps easier to decide that a given project should be done. And, when I say that, I realize that it is a human factor.

For instance, recent investigations which were made of the Department's research program show that, in several instances, a research project was one in which some individuals primarily were interested. In one instance, for example, the work was done for the author's doctorate.

There were several other instances where apparently the project was of more interest to one individual than to the overall field of research.

Also in reviewing our investigators' report, we find here that the Department of Agriculture has done a considerable amount of research in rayon. There may be reasons for the research on rayon, but I do not know that it is agricultural in nature.

Mr. ANDERSEN. What was that, Mr. Chairman?
Mr. WHITTEN. Rayon.

WORK ON ORCHIDS OF GUATEMALA

Many things disclosed by this investigation raise a question as to whether it was not somebody's personal and private interests that motivated the project rather than any general need in the field of agriculture for the answer. I do not know that you have had a chance to see this report, but with the permission of the committee, I certainly would want you to have it made available to you. We know you are just as sincere in your efforts to try to get a dollar's worth of value for a dollar spent in this field as we are, but some questions in this report need clarification. For instance, the research on orchids of Guatemala on which you brought the files down, what is the story on that?

Dr. SHAW. In the case of the project on the orchids of Guatemala, we employed a man by the name of Correll to work in our plant-introduction program. One of the primary jobs that he was going to have after we employed him was to work on the introduction of potato-germ plasm into this country for the improvement of the potato crop. At the time we employed him, he previously had been working with a foundation out of Harvard Univeristy on the project studying the orchids in Guatemala. At the time we employed him, he had the field work all done and had the manuscript related to the work in a rough draft stage. The work was to be published and actually was published by the Chicago Natural History Museum. We did permit him to use official time to bring that manuscript into final form and to do the proofreading on it when it came back from the publisher. I would estimate that in the total effort that he probably used not to exceed 1 month's time on this particular project.

We think that the cost of the effort would probably be something on the order of about $500. The work that he did on official time time was sufficiently in the interest of this country for us to have provided that opportunity for him to finish it.

The orchid industry is not an extensive industry, certainly in this country, but the growing of orchids is a business that amounts to about $8 million at wholesale annually. The folks growing the orchids are involved in a breeding job all the time. They are interested in having new germ plasm to improve their orchids and they are interested in the orchids of Guatemala. We felt that the expenditure on the project was justified in terms of the interest in orchids in the country.

Mr. WHITTEN. I doubt if there is any information on plants or animals that might not be of some interest somewhere. But the question is whether or not it has a real value to agriculture. The point I am making is that this project was promoted by and was the desire of the person in the instance we speak of; was it not?

Dr. SHAW. The man who had the project under way had completed all the fieldwork before he came to us. It was a case of the publication of the findings. So it was work that he had been interested in before.

Mr. WHITTEN. I think I have been one of the strongest advocates of research—but do you not think it weakens the research of the Department, and weakens this committee in fights on the floor for

adequate funds, when we find that some person who had been doing something on his own, reaches the point where he wants to put it in manuscript form to get his doctorate, and we take him on in the Department of Agriculture and pay him $500 so he can do that? Do you not think that leaves us in a rather defenseless position?

Dr. SHAW. I think that if it were the general thing, that I would not like it myself. When this project was brought to my attention by your investigators, I was disturbed about the project. I do feel that the expenditure that was made can be justified. I am frank in saying, however, that in terms of the total project, the field work involved in doing the study of the orchids in Guatemala, while it was a perfectly legal thing for us to do it, I am sure that we would not have approved the whole project because other things would have had higher priority with us.

Mr. WHITTEN. That is the point that I make and that is one reason this committee for the first time in several years is trying to go into this, project by project. When you get considerably increased funds over what you had the preceeding year, the risk of ending up with another "orchid in Guatemala" project is greatly increased; is it not?

The pressures that a person has to meet to get a project approved, are much less in a period when you have considerably more money than if you were operating on less money.

Mr. DEANE. Did his employment with the agency involve the completion of this personal project?

Dr. SHAW. Well, I think in terms of his own mind, that the opportunity to finish the job—he had it in rough draft—and to complete the manuscript and to carry it through to publication was one thing that he would have expected out of almost any employer, whether a college hired him or we hired him. Whenever you hire a man, and he is in the midst of something, and if it is within your line of work, and it is what you consider of sufficient importance to carry it on, I think it would be fair to say that the normal practice is to let it be finished.

Mr. DEANE. Did he receive any compensation for the publication in any way?

Dr. SHAW. No. This was published, as I mentioned, by the Chicago Natural History Museum. There was no remuneration to him. He was furnished 8 or 10 copies by the publisher. It was a book. That is what it turned out to be. He got 8 or 10 copies of the book.

Mr. DEANE. I would like to see a copy of it. Do you have one?

Dr. SHAW. I do not have one with me but I can bring it up. It is a systematic study of orchids.

Mr. DEANE. How many pages?

Dr. MOSEMAN. There are 727 pages.

Mr. DEANE. Thank you, Mr. Chairman.

Mr. WHITTEN. Doctor, that is fine. But there is a considerable amount of increase in the budgeted funds. In other words, the budget has provided a considerable increase for this year over last year. What is the increase proposed over last year?

Dr. SHAW. A research increase of $1,862,000 is included under salaries and expenses, Agricultural Research Service.

Mr. WHITTEN. That is for particular projects; is it not?

Dr. SHAW. Yes, sir.

Mr. WHITTEN. So each of those projects that you have this money for, if they are meritorious, have been delayed a year while the money

that could have been used for these new projects was used for this "orchids in Guatemala" work. I am trying to show you the relative merits of these projects. In other words, we always have limited money and it is a case of how best to spend that money. If you could have everything, that would make a different story.

COMPLETION OF "FLORA OF DOMINICA" PROJECT

Now, I turn to another item reported on by the committee's investigating staff: It has to do with "Flora of Dominica" I would like to read the findings of our investigator:

Another project taken from random samples is entitled, "Flora of Dominica, BWI, Part I," HC–b–11–4–14, a 1-year project under the leadership of a researcher. The Section Chief advised that at the time the researcher was being considered for employment, he had indicated that he wanted to complete part I of the subject at Government expense and would also like to have the Government subsidize its publication. It appears that the researcher had done considerable research in this field while attached to the Gray Herbarium at Harvard University, and while at the University of Massachusetts. The Section Chief stated that he advised the researcher that by reason of the lack of relationship between this work and work for the Department of Agriculture, he, the Section Chief, would not be justified in subsidizing the publication, but that he did agree to the subsidization for the development of the material for publication. The work on this subject is now being published by a private publisher for sale to the public, the Section Chief continued. The Section Chief stated that although he did not believe that more than a month of total time had been spent by the researcher on completing the manuscript, proofreading, and so forth, he, the Section Chief, had submitted the 1-year estimate of the duration of the project to his superiors because they "do not write up anything for less than 1 year and that he did not know how long it would take."

The statement is made that he thought it would take a month. But your Service wrote it up for a year, whether it took a month or 3 days or 2 weeks. That was the policy. That is the statement that is reported to us. The report goes on to say:

When it was pointed out that the projects of 1 and 3 months' duration had been observed in the records of the central project office, the Section Chief reacted by stating that he was probably in error in this regard.

In replying to a question whether the subsidization of these projects was a matter of departmental policy, he advised that "he knew of no departmental policy on the subject but that if there was any policy involved, it was formulated by himself in these cases and that he would assume complete responsibility for his action on them." He emphasized the point that in the instances mentioned above the policy is "located here [meaning himself] with no objection from the top." In a rather surprising manner, he added that "should similar cases arise in the future, he would conduct himself in a like manner and he felt sure that he would have the backing of his superiors."

In response to an inquiry whether this principle of subsidization of work for doctorates, published articles, unrelated to research of objectives of the United States Department of Agriculture was a method of obtaining highly desired personnel, he stated that this was not the objective but rather that the purpose was to "serve the interests of science in general and to provide a means for fulfillment of the ambitions of the individuals involved to complete work they had begun in other fields." However, he did indicate that in some instances, certain employees interested in research unrelated to USDA activities had, on their own time, conducted their research, prepared manuscripts, proofread, and so forth. He was asked whether he considered it unusual for the Government to pay the salary of someone engaged in private work for his own enrichment or advancement, and particularly whether it was unusual to present recommendations for such work in a manner which would indicate that it was for the benefit of the Government. The section chief stated, in effect, that he saw nothing improper in the procedure he had adopted and that, in any event, the amount of time spent in this private work was insignificant. He also ventured the view that Govern-

ment research should not imitate the practice obtaining in private industry whereby all data, notes, memoranda, diaries, and reports are retained as exclusive property of the employer.

In other words, this man says that, notwithstanding the fact that the Government pays the cost of it, he did not believe that the Government ought to have the benefit. And yet, as we all are aware, for any invention or any discovery that the Department of Agriculture may make in other fields, patents would be taken out in the name of the Government for the benefit of all the people. The report continues:

Also he saw nothing unusual in the procedure in his office whereby Government research is conducted at Government expense freely given to outside publishers, and the Government, in turn, purchasing from those publishers the work that it had freely given to them.

That is a rather serious indictment, Dr. Shaw, of not only the individual, but of policy. I would like to know what this "Flora of Dominica" is.

Dr. SHAW. Would you be agreeable to having Dr. Moseman discuss that? He is more familiar with it than I am.

Mr. WHITTEN. I will be glad to have Dr. Moseman go into that.

Dr. MOSEMAN. I would like to explain the background of both of those projects, Mr. Chairman.

Mr. WHITTEN. Tell us what the flora of Dominica is, so we will know what you are talking about.

Dr. MOSEMAN. It is the plants of Dominica. It is a summarization of the different plant species and types in the Greater Antilles or in Dominica. Dr. Hodge had made a study of the flora of Dominica while he was with Harvard University. He had all of that material available in manuscript form. He needed to do some checking in our files at Beltsville to be sure of some of the nomenclature in the manuscript and then had the manuscript typed in final form. It took his secretary about 2 weeks to do that work.

Now, it is the type of work that we try to fit in with a man's regular immediate responsibilities on his research program. The reason we are interested in such things as the flora of Dominica is that we make explorations, many times, for different types of plants. Many of the yams and sweetpotatos and some of the materials that we are using in cortisone studies come from the Dominica area. If we have a background summary of what is available, the plant types available in these different countries, we have a ready reference and know where to send our plant explorers when we want such materials.

REASONS FOR COMPLETION OF ORCHID PROJECT

The same situation prevailed with Dr. Correll. He had done the fieldwork, had all of the material essentially complete. I am willing to assume full responsibility for this situation. While I was Chief of the Bureau of Plant Industry, Soils, and Agricultural Engineering, I took the position that there should be no work reported out of the Bureau in publications or in any other form that was not a matter of record somewhere in our project office. I think Mr. Erlanson is the gentleman you are referring to here who was following this policy of the Bureau. He wanted all the men in his organization who were carrying on this work to be sure to have the matter of record.

Dr. Correll is one of the most productive botanists and taxonomists in the Department of Agriculture. His wife is also a trained botanist.

She does a lot of work at home at night reading his manuscripts, not only these that he has developed as part of his Harvard University connection, prior to his employment with us, but also his official manuscripts. Here is a publication that he has put out, on the genus Solanum. It is a taxonomic treatise of the potato species in the Americas. This is in one volume; he has a second one coming out. It involves a lot of detailed proofreading and checking. I feel that while we may have been guilty of giving a few benefits to Dr. Correll in the way of a few hours of his official time during the day to utilize our plant record cards in reviewing his taxonomic study on the orchids of Guatemala, the Government is not really losing. He is one of those workers that I am sure has made up that 30 days, in his time and his wife's time, many times over. We evaluate our projects not only in terms of what is on the project outline, but what we know about the individual research worker, Mr. Chairman, his loyalty to the job, his productivity, and factors of that sort. It is hard to put those things on paper.

The one other point that was mentioned relative to doctorate theses work——

Mr. DEANE. Before you leave this subject here, how long has he been with the Department?

Dr. MOSEMAN. He came with the Department first in 1943. He worked for a little over 1 year. Then he was in the Navy for several years. Immediately on return from the Navy he took a year's leave and went with the Guggenheim Foundation. That is when he developed the background information for this particular publication. He had the background or field work completed, but he did not have this manuscript in final form. We did permit him to use some of his official time to finish up that work.

We feel, as Dr. Shaw has pointed out, that while we would not have initiated the complete project on that subject, the small investment of around $500, 30 days of a man's time, to put out this 2-volume treatment of 727 pages, for which the Department gets credit, was worth while because of the interest of the orchid growers, and the orchid industry in this country.

Mr. WHITTEN. Now, if you had had to cut out some other project in order to do that work do you suppose you would have done it, Dr. Moseman?

Dr. MOSEMAN. No, we certainly would not.

Mr. WHITTEN. There, again, I am pointing out the problem that we have when you are operating with increased funds.

Now, if the Congress had known, if the American people had known, and if those of us who had supported the research through the years had known, that we were asking for more money to do this kind of work, don't you know that we would never have got that through the Congress?

Dr. MOSEMAN. I certainly agree with your point, Mr. Chairman. I think I might explain that this project was set up over a 2-year period because it was intermittent time. Whenever Dr. Correll had a few hours of spare time now and then, he did some work on it.

Mr. WHITTEN. All I can do is to try to develop this problem as best I can for the good of everyone—and I want to say I am proud of the many fine contributions all of you have made, and I know that you have devoted your efforts to do the same thing—so let that be understood in the record.

OWNERSHIP OF RESEARCH RECORDS

Dr. SHAW. Could I make a couple of comments?

Mr. WHITTEN. Yes, sir.

Dr. SHAW. There was one point where the investigators indicated that our research man said it was not our policy to retain the notebooks and records of the work that was financed by the Government. It is our policy to retain all of the work that is financed by the Government to our own credit.

Certainly, when any of our employees leave us, the notes and research data he developed are our property. He does not get to take that with him.

Mr. WHITTEN. I was a lawyer before I came here, but I don't profess to know all the Federal law. It may be that none of these things, such as paying a man for doing work and then letting him have the benefits of it, either in getting his doctor's degree or in receiving pay for papers and books that he might write, are illegal. But do you not think, if that is going to be the policy, that Congress ought to say that, in addition to whatever remuneration the Department of Agriculture pays its employees, they shall be entitled to any financial rewards or other benefits that they get in private sales or sales in commercial ways? Congress, I know, has never done that yet.

If that is what is going to be done, don't you think that would be the proper way to do it?

Dr. SHAW. Certainly, it is my feeling and it is our policy that we will not approve anything except that which is in the interest of advancing our work.

Mr. WHITTEN. If it advances your work a little and his a great deal, that would still come under your policy.

EMPLOYMENT OF POSTGRADUATE STUDENTS

Dr. MOSEMAN. Could I say something on that, Mr. Chairman?

I think if you would look at the title of my doctorate dissertation, you would find that it treats of a correlated inheritance study of height, seed size, oil quality, and other characteristics of flax. That was a project I conducted on my own time, while I was working part time for the Department of Agriculture on seed flax research. We have many instances of that same kind. We frequently hire graduate students on a full-time basis during the summer months, working on a research project, and part time during the school year. We try to arrange for them to develop thesis problems that are in the field of the research program on which they are working. We find that we can develop much valuable background and basic information of benefit to public research through the use of such graduate assistants.

Now, we do not authorize employees to use Government time to carry on thesis work that is not in the interest of the research programs for which they are responsible.

DISCUSSION OF POLICY FOR INITIATING NEW RESEARCH WORK

Mr. WHITTEN. Dr. Moseman, some of these things are so unusual as to strike the attention of our investigators. They appear so extraordinary that I raised the question here. Some of them I am

not in a position to pass on, because I am not informed enough to know the answer. But I will say that this information certainly is sufficient for us to go into it to see if it is a sound policy and if it is not, to see what we should do to correct it.

I once served on the Navy Appropriations Subcommittee during the war. The weakness of the approach, as I saw it there, was that practically every local Naval Establishment was invited to ask for a lot of appropriations and out of Washington went requests for the local establishments to ask for what they needed. Of course, some places thought that they should act on the theory that it would be cut down at the Navy Budget Office and cut down a lot here, and the 50 percent that was left would probably be more than they had hoped to get.

Now, I mention that to point out here that, if you folks have a project that you know you need and set out to get somebody to do it, that is sound. But when by your system, you more or less invite folks to come to you with their projects, you may be promoting a lot of these things which are not essential. The advisory committees are sound, I think, in reviewing the work that you plan to do. But you have a terrific job if you are going to let all of the projects be initiated by those who have a personal interest and then just approve them. You will be in business from now on, and in that business you may be neglecting the broad general agricultural interests of the United States. In theory all these millions of dollars could be spent for somebody's pet projects without having anything left for the general things. I know you do not do that, but it could lead to that. Do you not think it is time, perhaps, that you slowed down on letting folks come to you with something and trying to sell you, as against a determination at the top level as to what you need, and starting with what you need and then going out to get it.

Dr. SHAW. I think you are right in the position you are taking here and I would like to mention one thing that I do not think we have discussed with you before.

INDEPENDENT REVIEW OF RESEARCH WORK

I may have mentioned this incidentally, last year, at the time of our discussion of the reorganization. Up until this past year, I have not had any independent means of going and examining this work in the field and having somebody report specifically to me in the same way as your investigators who have examined our work. In other words, I have been dependent always in the past on the subordinate under me in the line capacity supervising all the work to report to me on all of the work. I have the greatest confidence in those subordinates but I did feel that it was necessary, in addition, for me to have a small group for an independent program appraisal, and internal audit staff, which I am getting organized now.

I have only had it under way for about 6 months. The staff members of this unit examine our work in the field and report back to me directly on their findings so that I will have an opportunity to take corrective action wherever I see it is necessary. I am satisfied that I may find some things going on of which I do not approve and I am certainly going to do my best to have the kind of a program that we can all support.

Mr. WHITTEN. I have complete confidence in both you and Dr. Moseman. But I think the questions up to this point show what a difficult assignment it is, and I think they show that we have to have a constant review approach to it. As I say, prior to the time that the increase in funds was made available to you, and you did have enough money to meet all projects that came to you, the competition between the projects themselves tended to weed out the lesser ones. As we get more money, we lose that competitive situation which is probably the best safeguard.

I would like to review with you some other things here. Again I want to say I am not condemning all the things brought out in this report.

TIME LIMIT OF LINE PROJECTS

Mr. MARSHALL. You called attention to a statement made that projects were not written up on a short period of time; that it would require a year; that this man said it would only require a month, but he would have to write on the basis of a year. What kind of an answer do we have to that kind of thing?

Mr. WHITTEN. Could I interrupt to say that in that same report the investigator did go on and say that in the central project office he found where projects had been approved for 2 and 3 months. It is in the same statement.

Dr. MOSEMAN. I think I can explain that, Mr. Marshall. The particular project about which we are talking was one where the man would spend only a few hours a day, now and then, as his other work permitted. It was recognized that the effort he would put on that project would be intermittent and extend over a period of time. Also, that the process of getting the manuscript reviewed, edited and published would take some time. We estimated that time at about 2 years.

Now, we certainly can approve a project for a shorter period if it is a project that we are going to initiate and work on full time to completion in any brief period, say, 3 or 6 months.

Dr. SHAW. We can, and do, and it is our policy to approve a project for the time required to complete it, whether that be 15 days or whether it extends up to 5 years.

Mr. MARSHALL. Would it not be better administrative procedure and a better saving of the taxpayer's money to approve those projects on the approximate time that it would take rather than leaving the impression that it should be extended over a long period of time?

Dr. SHAW. Certainly; that is one of our basic instructions in regard to approval of projects; that we only approve them for the estimated time that it will take to complete them.

Mr. MARSHALL. That answers the question.

Dr. SHAW. As I mentioned to the chairman a minute ago, I do have now a better opportunity with this small staff of independent examiners to review this work to find out if we are getting performance according to the instructions that have been issued.

PROGRAM DEVELOPMENT

Mr. DEANE. Mr. Chairman, I would be interested in knowing how projects are selected? Are new projects contemplated with the increased funds in the budget?

Dr. MOSEMAN. I think we might go through the process we have of developing a program such as our wheat research activities. That program has received some additional support in recent years. It is one of the largest crop research programs we have. It covers about $702,000 of expenditures and is countrywide. We manage that work by having a national project leader who has the responsibility for all of the wheat research. We have further broken that work into regions. We have the hard red winter wheat research under a regional project leader. The same is true for the soft red winter, the hard red springs and the western wheats. We also have a project leader who covers the whole problem of diseases because they cross the regional boundaries.

We have the rust diseases that go all the way from the southern part of the hard red winter wheat area through the durum area, on up into Canada. The same is true for quality. Quality research is necessary in all classes of wheat even though it may vary for the durums, for the soft red winters, the hard red springs, and other classes. There are certain basic quality factors; so we have a man who is the leader of our quality work.

Mr. DEANE. May I interrupt?

Who in the Department makes the decision to proceed with a project?

WORK ON NOXIOUS WEEDS

Mr. HORAN. Will the gentleman yield there?

May I say to my colleague that I have asked for one that comes under that category. I would like to have a report on it. It fits in so well here, could I ask Dr. Moseman what we are going to do on my request for some biological enemy work on the Dalmatian toad flax?

Dr. MOSEMAN. We have an item of increase included in this year's budget estimates that will provide for some explorations for weed control pests in the Mediterranean area. We plan to concentrate the first year primarily on the Halogeton weed; but the Dalmatian toad flax and one or two other noxious weeds are also native to that same area. So our plan is to have our explorers go into that area and look for diseases or insect pests on the Dalmatian toad flax as well as on Halogeton.

Mr. HORAN. For the information of my colleague from North Carolina, this is a noxious weed that we have discovered in our area. I do not know how extensive over the United States it is. However, it was discovered in the middle twenties and nothing in particular has been done on it, as I understand. I know the Department was interested and a routine request came from our noxious weed control group in Spokane County to have something done in this direction. I am happy to hear that it has been included in that. That is a typical way that these projects do get started. I think they fill a definite need. That, of course, is up to the Department. If they do not feel that it does, we can get turned down, but you always give us the benefit of every doubt.

Mr. ANDERSEN. I gather, Mr. Chairman, that Mr. Deane is trying to find out just how these projects get started.

RESPONSIBILITY FOR WORK ON LINE PROJECTS

Dr. MOSEMAN. I have not given you the answer to that. The reason I wanted to mention these project leaders and the supervisory staff is that we look to the project leader as the man who is immediately responsible for the line projects that are applied to the particular work project he leads. The project leader usually recommends the lines of work to be undertaken to solve a given problem.

PROCEDURE FOR EVALUATING PROPOSED PROJECTS

Mr. DEANE. Take a situation like this: I know an area in my district where a man is manufacturing certain sprays which some in the community feel is damaging to life. If there was enough cause to feel that you should go in to make a study of that situation, who in the Department would make the decision? How would you proceed in deciding on the merits of such a project?

Dr. MOSEMAN. That type of problem should be directed to the attention of Dr. Shaw's office. He in turn would see that the problem received proper consideration of his research staff.

Dr. SHAW. The kind of situation that you have mentioned could come to the Department's attention from yourself or from anyone in the area who could bring the problem to your attention or some of our own investigators that are working cooperatively with the North Carolina State College. Maybe the investigator himself may see the problem.

He would discuss it with his superior to point out the seriousness of the problem as he saw it. He may recommend it to the investigator that was located in the area. If we did not have anybody in the area, someone would be sent down to look into the situation. If it was reported that this was of serious consequence, and it seemed to justify the initiation of research, we would get more definitive information with regard to it. The first thing to be done would be for the project leader to discuss it with his branch chief and with Dr. Moseman, the program director in this area. If they determined that this is important enough that it ought to be attacked, the first thing we would do is to see if we could make adjustments within the program in that area so that it could be included and something else dropped.

Mr. DEANE. The money that would be involved?

Dr. SHAW. That is the first kind of determination that we try to make. Within the money we have, can we carry this on and make adjustments in our programs? If it is determined that that cannot be done, then we would expect an examination of any other work within the branch to see if there were other opportunities to carry on this research with existing funds. Finally, if they feel that this new work is important enough and should be pursued, but they are not able to finance it, they will discuss it with me. I would again, in terms of our whole research service, attempt to find out if we could make adjustments in order to carry this project on, without asking for increased funds. We make a number of such adjustments each year. If the problem were big enough to be beyond our possibility of adjustment, we would try to recommend to the Secretary of Agriculture and through him to the President that an increase be included in the budget.

Mr. DEANE. In other words, you would be the person directly responsible for the projects that are initiated?

Dr. SHAW. Yes, they finally are cleared through me. I do not approve each one of these projects. I have the five directors, such as Dr. Moseman in my office, to whom I have delegated responsibility to approve such projects.

Mr. DEANE. That is a good answer. Thank you very much.

Mr. WHITTEN. Are there any other questions?

FAMILY UTILIZATION OF CLOTHING

Proceeding with the points raised in the investigator's report, we come to another which deals with family utilization of clothing. Our investigator shows that this project started in November 1948, and the estimate of its duration was 3 years. It has since been extended and is continuing without a fixed date for termination. He states as follows:

> The objective of this research was to accumulate data on the ownership or inventory of clothing by American families in urban areas for comparison with similar ownership or inventory in rural areas.

In other words, it is apparently intended to determine from that how many clothes people have who live in towns and how many they have who live out in the country. He continues:

> While no immediate connection or benefit to agriculture or the agricultural community was intended in this project, an indirect benefit was gained through the educational value of such information in gaging the welfare of the agricultural community, it was advised.
>
> To date, seven reports in the form of printed pamphlets have been issued on the subject.

It is not clear to me whether by sending those pamphlets to the United Nations they wanted the people of the world to know how much worse off the rural people in America are than those in the cities, insofar as clothing was concerned, or perhaps to show how close they were together. The report continues:

> In the compilation of data for the pamphlet Family Clothing Purchases by Income which covered experience with 514 families in the Minneapolis-St. Paul areas, 21 months were required to complete the compilation. In this case, as in similar surveys, a leader of this branch went to the area, hired and trained a group of female interviewers to conduct the actual family-to-family survey. These interviewers were hired as indefinite employees in grades ranging from GS-2 to GS-7 with a relatively few cases of higher grades. Survey findings were based solely on representative samples of families in the particular community. The representative sample of families interviewed is determined in advance by the method of stratification. Stratification amounts to merely sample selections of certain families from several income brackets.
>
> The data gathered in the surveys are published in pamphlet form and distributed on the basis of mailing lists; distribution number varied from 1,300 on report No. 1 to 680 on report No. 7.
>
> On the mailing lists are a variety of magazines, newspapers, clothing manufacturers associations, labor groups, advertising agencies, State and private colleges, the United Nations, and a group of private individuals. There is no charge connected with the pamphlets and they are sent to the parties on the mailing list under the franking privilege. The survey of the family utilization of clothing was estimated to cost $20,000 yearly.

Now, on this committee we have recognized that certain work was done in connection with wearability and other things pertaining to clothing. I was not aware that we were paying a lot of people to go

out and find out how many pairs of trousers some man in the country has as compared with somebody in town. It strikes me that that is of questionable value. But the point I make is, if you folks in your wisdom think it is sound, why that kind of a survey or kind of a project would continue from 1948. It was set up for 3 years, and now apparently has been continued on an indefinite basis. Had there been competition for what research was done in the Department, due to holding down the amount of money, wouldn't you say that the chances of that project having been terminated, whatever its value may be, would be greatly increased, Dr. Shaw?

REDIRECTION OF CERTAIN RESEARCH WORK

Dr. SHAW. I think it definitely would. In connection with the one that you are discussing now, I have studied this situation in some detail for the last 2 or 3 years and I have come to the conclusion, independently, by the way, of your investigators, that there is a need for us to discontinue certain work in this area, and we are going to recommend at the time that Dr. Stiebeling is before you, some reorientation of this work.

We have not gone into the actual reorientation as much as we would otherwise have done because we felt that the things that are going to be suggested are of sufficient importance to be discussed with the committee before we take the action; but we are going to recommend that a number of studies in the fields of textiles and clothing and also in the housing and household equipment research be discontinued and that we redirect our attention and funds to what I consider to be much more important work on foods and nutrition.

STUDIES RELATING TO OUTLOOK REPORTS, FAMILY BUDGETS AND FARM FAMILY LIVING

Mr. WHITTEN. Now, proceeding further, the report states that we have annual outlook reports, family budgets, farm-family living in four Kansas counties. It states in this connection:

> The object of this latter study was to determine changes in living standards within the last 10 years in these particular communities.
>
> The data gained from this research reportedly would be useful for educational purposes for future farm families The cost of this type research could not be estimated accurately because time on individual projects is not gauged to budget allocations.

When we are told that research is the answer to the future well-being of this country, that we have to have more and better answers, which I have used in my own arguments on the floor in support of this appropriation many times, I will have to admit that I didn't especially have in mind that I was getting money to find out what the families in four Kansas counties wear and why their living standards were changing. I just doubt whether I could have sold it if I had known that.

I want it to be clear that I use Kansas only as an example, since it is mentioned in the report. The chances are it is better there than in some other areas.

SURVEY OF FARM-FAMILY EXPENDITURES

The next item in the report has to do with a study of farm-family expenditures in Montana, 1949–50.

The report states:

This research project was undertaken to get a sampling of what the farmer or farm family had to pay for all goods and services for the farm family and the farm itself. For purposes of illustration only, the following titled pamphlets were selected to demonstrate the great range of research subjects engaged in allegedly for the benefit of the farm family. These are but five of the reports connected with the research on family utilization of clothing. On these projects approximately $20,000 annually was spent.

The first is family clothing inventory by income, Minneapolis-St. Paul, Minn., 1949; the second is family clothing inventories by age, Minneapolis-St. Paul, Minn., 1949; the third is farm-family clothing purchases and a farm-city comparison, Meeker and Wright Counties, Minn., 1949–50, Minneapolis-St. Paul, Minn., 1948–49; and No. 4 is family-clothing inventories and purchases by place of residence, Minneapolis-St. Paul, Minn.-Birmingham, Ala., 1948–49; and the last family clothing—gift, homemade, handed down, Minneapolis-St. Paul, Minn., 1948–49.

While the head of the Branch indicated that all research projects under her supervision were slanted toward the giving of useful information to the farm community, she evidenced much difficulty in endeavoring to explain away the impression that such research was related primarily to the urban community.

It is not clear to the staff how projects such as family utilization of clothing concerned with a survey of outer clothing and the most intimate of underclothing of select city families can be of practical use to the rural community. It was somewhat more than difficult to believe that this research has any value to any group with the exception, perhaps, of the clothing trade. It is not easily discernible as the type of research one would judge necessary if the yardstick of the best results for agriculture and the appropriated dollar is used as the standard.

PROJECTS ON SYNTHETIC FIBERS

Now, turning to the next one about which a question is raised, the report states—

in the random sampling of research projects observed in the records of the central project office, a number of research projects dealing with the subject of manmade or synthetic fibers were noted. Since it was emphasized by other USDA officials responsible for price support and research programs that intensive research was being undertaken to develop new markets and uses for natural fibers, such as wool and cotton, which are in surplus supply, due, in part, to their displacement by manmade fibers, inquiry was made respecting the nature and extent of the research engaged in or conducted by this section in the field of manmade fibers.

I still say that they are not surplus as long as we will not offer them for sale. The report continues:

Questions were also raised on the use made of the results of this Section's research on manmade fibers and also what, if any, coordination between this type research and other USDA problems and responsibilities existed. In her reply, the Branch head advised that her Section had at one time, carried on a cooperative project with State colleges on the comparative merits of bedsheets made of cotton and rayon. This project was started in 1947 and was discontinued in November 1952. She advised that this project had been suspended prior to its completion because of objections raised by the cotton advisory committee. On this point, it was learned that the cotton advisory committee strenuously objected to the use of agricultural money and staff to develop findings which might logically affect the marketing of patent fibers.

In continuation of the discussion on the subject of manmade fibers versus natural fibers, she stated that her Section had one project on the relative merits of floor coverings made from both fibers.

Research of this nature, she related, was needed in order to answer inquiries on newer things. She advised that nothing had been published on the subject

but that findings were used in answering various inquiries over the telephone and in person from all sorts of people interested in such information.

I do not profess to know where the realm of agricultural research begins or where it ends. I do not question that those who manufacture things are entitled to certain tests. But the Bureau of Standards and others are set up to render such tests on most any discovery or production. I do seriously question whether we should try to get money in the name of agriculture, to be used to develop or promote the use of nonagricultural commodities.

I am not questioning the soundness of the Government doing it. But I do raise the question as to why agriculture should do it.

Is there any comment on that?

Dr. SHAW. In terms of the whole field that you have been describing, these are in areas that when Dr. Stiebeling comes before you we are going to want to discontinue; but I would like to make a comment in regard to this work on rayon in sheets.

It was indicated that rayon sheets were coming onto the market and it seemed important to have a comparison as to what their value was going to be, as compared to cotton. The study showed that, with either rayon in total or rayon mixed with cotton, shrinkage was much greater, that the wearing qualities were not as good. It seems to me that the end product of the investigation is to advance the use of cotton.

Mr. WHITTEN. Well, Doctor, because I raised these questions and they have been raised at our instance by the investigation, I do not mean to preclude you from your answers. I raise these points and, whatever the basis is, I want your answers because we are trying to determine the course we should follow.

Another statement is made:

In an interview with the Assistant Secretary for Administration in the late stages of this survey, he stated that research projects of the home economics people such as "buying men's suits" had been eliminated. He expressed surprise when the staff informed him that these projects were continuing.

It would appear that the Secretary's Office thought it had been stopped.

Dr. SHAW. I think what Mr. Roberts is referring to is that as early as June of last year I started discussing this with him in terms of reorientation of this whole program. That is coming to fruition in our recommendation to you at the time we are here before the committee.

AGRICULTURAL ECONOMIC STUDIES

Mr. WHITTEN. Now, we turn to the field of agricultural economics. This is the field that we have had lots of trouble with for a good many years. It developed at one time, and I thought the Department had learned its lesson from that, that they had a research project on social well-being in Southern States. Some of the reports did not make me feel too good but I was not chairman at that time. Our distinguished friend who is now in the Senate was chairman. And I recall that, in one of those reports for which the Department was paying good money, one of the essentials for success in southern Illinois was to own a hound dog and a long barreled shot gun. I welcome my friend from Illinois into my class because they had made somewhat similar charges against the South.

However accurate that fact may be, I don't know that it is of any great interest to the Nation and doubt that we should spend money for that purpose.

Now, it is pointed out that the present activity of the branch is pointed toward greater research emphasis on the levels of living of low-income rural groups, including both farm and nonfarm persons. Of particular interest in present studies is research information on migratory and hired farm workers. Studies are also directed toward the obtaining of pertinent information on nonfarm employment and general welfare problems of rural people with respect to health, social security, and social trends.

That business about nonfarm employment might be good, in view of Mr. Morse's speech that the way to make money on the farm was to have an off-the-farm job. But there is a question as to whether that should be a research project sold to the Congress and to the people on an entirely different type of argument.

The Department of Labor duplicates that kind of work, too.

Mr. ANDERSEN. The Department of Labor, Mr. Chairman, I believe, had projects very much similar to that.

Mr. WHITTEN. Another project reported on is "Recent developments in agricultural labor management relations." It is concerned with the gathering of information in agricultural labor relations, the progress of unionization of agricultural workers and workers in agricultural processing industries, as well as factors underlying any labor disputes in agriculture.

The head of this particular section thought this was necessary to keep informed in the event any legislation comes up on minimum wages in the Congress.

Dr. SHAW. These last two that you have mentioned are not within the Agricultural Research Service. They are in the Agricultural Marketing Service.

Mr. WHITTEN. You are correct. But, since we have the subject here, I would like to put these in the record and where they do not come under your jurisdiction, I would not expect you to be called on to comment on them.

Another project is "Bibliography on problems of extension of social insurance legislation, farmers and farm laborers." The next one is "A study of labor mobility within agricultural and between agricultural and industrial jobs."

Another portion of this branch's work is the collaborative effort with the Bureau of the Census in a publication of monthly surveys on the status of farm population. Also, on an annual basis, this branch compiles statistical data gathered from a questionnaire mailed to some 60,000 rural people soliciting urgently needed cooperation in obtaining information on the numbers of people living on farms in the United States.

There are numerous things of that sort which I will not try to cover here. I think I have mentioned enough there to point out that at least some part of agricultural research funds are being used for projects that are far removed from what is usually considered when efforts are made to get additional funds for research.

Mr. Marshall, do you have any questions?

DISSEMINATION OF RESEARCH RESULTS

Mr. MARSHALL. Dr. Shaw, before this work gets from the research laboratory out to the farm, it goes through a number of steps, educational processes; is there any way that you know of that that could be shortened so that the county agricultural agents might get this information more directly from the research people?

Dr. SHAW. I think that there are things that can be done to speed it up. In terms of our efforts in the past year in this direction, we are taking certain subjects—like the one on wheat rust or the vesicular exanthema of hogs—we are writing that up in as simple and straightforward a fashion as we can to give all the facts and background on it and where the advance is. We are doing that in my office, summarizing it, in simple language, to go directly to the county agents.

I think it may well be said, that in past years research people have more or less left it up to extension people to ferret out our new findings and carry them to farm people.

We feel that we have more of a responsibility than that. We are engaged right now in summarizing our own material and trying to make it available to the county agents directly, rather than having them come in and hunt for it. I think that will help.

Mr. MARSHALL. The information that you are getting out does not need to be rewritten before it goes to the agent?

Dr. SHAW. That is what we have attempted to do. What our problem has been in the past is, that most of our research reports are highly technical and can only be understood by another scientist in many cases. With science getting as complex and diversified as it is, the county agent is up against an almost hopeless task.

So what I have been doing—I have one writer, a professional writer, who is trying to write this scientific information in terms that laymen can understand. We have had good response from the county agents who have been receiving it and want us to continue and do more and more. I think it is going to be helpful.

Mr. MARSHALL. I am in hopes that it will be, Dr. Shaw, because it has appeared to me that at times in the past our information has gone through quite a few hands before getting to the place where it can be used.

Dr. SHAW. I think that is true.

Mr. MARSHALL. So if something is being done along that line, I compliment you for that.

Dr. SHAW. We have a full-time writer engaged in this activity. We want to have an opportunity to see if we are furnishing the county agent just what he needs. Possibly we may expand that some.

PROJECTS INITIATED AND PROJECTS COMPLETED AND DISCONTINUED

Mr. NATCHER. Dr. Shaw, the proposed increase for research for 1956 is $1,862,000. Now, did I understand you to say that there would be 406 new projects for the fiscal year?

Dr. SHAW. The figures that I gave were the 406 new line projects for the Agricultural Research Service in the calendar year 1954. These projects would relate not only to increases but also to our total going program. There would not be nearly that number initiated as a result of these increases.

Mr. NATCHER. Four hundred and six for the calendar year of 1954? I believe you further stated there were 380 discontinued.

Dr. SHAW. Yes, sir, 380 were discontinued in the Agricultural Research Service.

Mr. NATCHER. What do you mean by "discontinued"? Will you explain that, Dr. Shaw? Were they completed or what is the position as far as those 380 projects are concerned?

Dr. SHAW. A good many of them will actually be completed. Out of the total of the 380 discontinued projects, in the Agricultural Research Service, 141 were completed.

Now, then, in terms of the others, 181 were revised in light of the information obtained during the course of the project. We had not found the answer to the problem so it was necessary to continue the work.

I might give you an extreme example of one of our revised line projects.

We have had a line project on studying the rusts and smuts of oats probably for 25 years, and as far as I know, we are going to have that project forever. Just as soon as we get new varieties developed to resist the then-existing strains of rust, rust strains hybridize in nature and we have new ones to work with. It is a never-ending job. We do revise that line project at periodic intervals, not to exceed 5 years, when any new information that may have been developed may cause us to change our approaches. But some of these projects will go on forever.

Mr. NATCHER. Now, Dr. Shaw, as I understand this matter, 239 of the 380 were not completed. Can you state to the committee generally why the 239 were not completed?

Dr. SHAW. Fifty-eight of the projects were abandoned for one reason or another; 181 were revised and continued. I think the primary cause for revising projects is that we had not arrived at our objective. We had not solved the problem. Therefore, we have had to extend that given project or revise it, and to carry it on.

RESEARCH STUDIES PERTAINING TO DROUGHT CONDITIONS

Mr. NATCHER. Dr. Shaw, let me ask you this: Are any of the 380 discontinued projects—do any of these projects pertain to the drought situation in the South generally, directly or indirectly, do you recall?

Dr. SHAW. I couldn't give you the answer specifically that they do. Certainly we have not come to the knowledge of what is needed in the drought situation.

Mr. NATCHER. Let me ask you this, Dr. Shaw: Can you state to the committee as to whether or not any additional projects will be set up for the fiscal year 1955 which will deal directly or indirectly with the drought situation as we know it?

Dr. SHAW. There is no increase in the budget for that type of work but we are doing work on it in our going program in soils research. For example in our Soil and Water Conservation Research Branch, we have certainly tried to direct all of our attention in the southern plains area to doing what we can to ameliorate the effects of the drought. Many of our efforts in forage research, in terms of grasses that can be adapted, drought-resistant varieties and so on, will be in that direction.

Mr. NATCHER. That is what I had in mind.

Dr. SHAW. We will have some increase in forage research in this budget that will consider the grasses in the Great Plains.

Mr. NATCHER. Thank you, Dr. Shaw. That is all I have, Mr. Chairman.

VALUE OF INDEPENDENT INVESTIGATION OF WORK

Mr. ANDERSEN. Mr. Chairman, I am much pleased to see that you have called Dr. Shaw's attention to certain points of interest discovered by our investigators who have been working under the jurisdiction of this subcommittee the past few years. It seems to me that Dr. Shaw is taking the very correct viewpoint on what these investigators are trying to do, by assuming, which they are, that they are attempting to secure for our consideration a diversion of opinion, perhaps, than what could be secured from your immediate organization. It is simply a question of perhaps getting an enlarged viewpoint on certain matters that have been called to our attention. I personally think it is very good for everybody concerned.

I am glad to see your viewpoint on that, Doctor.

Now, your administration of research has been splendid and we want to keep it that way. We want to continue to have the confidence of the Congress in agricultural research because it means a terrific lot to agriculture as a whole and to the Nation.

Personally, I am under a debt of gratitude to our chairman for pointing out these few things as he has and I am sure that Mr. Peterson and you will accept what we are trying to do along the lines of reasoning that we have been approaching it. It is not with an investigative idea in mind. It is something far deeper than that. It is, as far as I am concerned, cooperating with you people, trying to help you where we can, without hurting you in any way.

Mr. PETERSON. Certainly it is helpful to me in administering the program, and my interests are the same as yours in wanting to have the best possible program we can have with the resources that we have.

Mr. ANDERSEN. And further, Dr. Shaw, I cannot see anything too much wrong with what the Department has done, with what Dr. Shaw has done relative to this Guatemala orchid situation or the Dominica flora. I think that perhaps a lot of good can be obtained from enabling a man, who has spent a good deal of time searching into something, to put the results of his work into such shape as to make it available for the rest of the Nation to study. So I cannot become too alarmed at the Department doing what it has done in relation to those two gentlemen.

If I were in your position, I think I would do considerably along the same line.

BOLL WEEVIL CONTROL

Mr. HORAN. Why is the boll weevil so hard to control or eradicate?

Dr. SHAW. Would you just as soon that Dr. Knipling, who is our entomologist, answer that?

Mr. HORAN. It comes under this category, I guess. I might say that my interest in agricultural problems is not restricted to the Fifth District in the State of Washington. I become a little bit intrigued because we have had this item before us continuously for some 26

years and it has done almost $7 billion worth of damage in that time in spite of past research. It has enjoyed its best years.

Dr. SHAW. Dr. Knipling is here. If you would care to have him speak to that.

Mr. HORAN. You have a pretty good outline but I would like to know more about what you are doing. Also, the States you are doing it in and the plan of work. But, first, I would like to know more about the boll weevil. I don't know too much about it.

Dr. KNIPLING. Mr. Chairman, we realize that the boll weevil is continuing to do a lot of damage to cotton although we do feel that a great deal of progress has been made in reducing the losses caused by the boll weevil. You asked why it was so hard to control. I think there are two reasons why the losses from the boll weevil have not been reduced more than they have. One reason is that it is one of the most resistant insects to insecticides that we have. For years, we had only calcium arsenate and it did a fair job. But even with the development of these newer synthetic organic compounds, which reduce the losses in cotton, if it is sprayed or dusted, they are still resistant and it takes treatments perhaps once a week or once every 5 days during heavy boll-weevil years to bring it it under control.

A second reason is that not all farmers take advantage of the information that we do have on methods of control. There is a reason for it. In some instances, where the average production might be less than half a bale or so per acre, it is costly to the farmer to spray or dust every 5 days. So all of them don't follow it.

I venture to say, however, if we did not have the methods that we do have, that the cottongrower, by and large, could not compete effectively today with some of the competing fibers because of the greater losses that would be entailed.

Mr. WHITTEN. Might I contribute to that coming from an area where it is a major problem? One of the factors is that, in the cotton-growing season, you have lots of showers and these showers will wash the poison off and you have to do it over. The other thing which I do not believe you have mentioned is that the boll weevil has a very fast rate of reproduction; it multiplies rapidly so that a number of generations work on the same crop. So if you ever let it get started, it multiplies tremendously.

Pardon me for interrupting, but those are two factors.

Mr. HORAN. Plus the fact, I suppose, considering climate, where you do not have freezing ground in the wintertime, or not apt to have?

Dr. KNIPLING. That is not necessarily a factor. The boll weevil is well adapted to go into hibernation even in cold climates.

RESEARCH AND CONTROL WORK OF STATES

Mr. HORAN. Do all cotton States have their own State research work going on currently?

Dr. KNIPLING. Practically every cotton State has some research work going on; that's right.

Mr. HORAN. Do any of the States have mandatory control laws which permit condemnation of untended acreages?

Dr. KNIPLING. No; not to my knowledge. I am certain they do not have.

Mr. HORAN. It is a very difficult field but Mr. Natcher and I, as we indicated before, were down in Florida and I know that they are

at least now in the process of considering legislation which would permit condemnation of properties that were not taken care of. It is as broad as it is long. It is not a happy thing to consider but those who are not tending the citrus groves which are being attacked by the burrowing nematode are making nothing out of it; they are gradually losing their shirts. So it becomes a problem of arriving at what is good for the community.

As I indicated also, I have asked our own director of agriculture in the State of Washington to supply Florida with the experiences that the State of Washington had to go into at various times in control work.

Along with those programs, of course, were disaster area financing systems which made it increasingly possible for people who had lost almost all of their equity in the property to receive aid.

As a result, the proper programs, the compulsory care of orchards in a community, that blow was not as bad as it might otherwise seem because at the same time there was a financing program carried on under the land use planning program under the Department of Agriculture.

It was a heartening experience but in this research, if we seem to be on a treadmill over a period of years, it does appear to me that there are contingent activities that ought to be resorted to in order to play fair with both the owners of these acreages that are affected, either by the burrowing nematode or by the boll weevil, and quite often that is outside of the jurisdiction, proper jurisdiction, of any Federal agency.

I wondered if any thought had ever been given to a more mandatory control of a pest which, on the face of it, would seem we are not making very much headway against.

Dr. KNIPLING. I might comment that in certain parts of the cotton-growing areas, especially the more southern regions where the crop matures early, the destruction, early destruction of the plants after harvest, will go a long ways towards reducing boll-weevil damage. We have known that, of course, for years. The difficulty is in the more northern areas where the crops mature later, the boll weevils go into hibernation about the time the crop is being harvested and early destruction would have no real benefit there.

In southern areas, we recognize that cultural practices, perhaps the utilization of defoliants, to where they won't have any food and so on, really add to communitywide efforts; but unfortunately, it cannot be applied throughout the Cotton Belt.

BURROWING NEMATODE

Mr. HORAN. I know that my colleague, Mr. Natcher, was impressed—I certainly was—with the way the people of Florida were approaching their problem. Now, they know what the menace is. Prior to a couple of years ago, they were not so sure but they are pretty well satisfied now of the nature of the beast they have to deal with and they are, I think, approaching it on a determined and pretty broad front, not all of which involves Federal assistance by way of supplying them certain aids because they are also looking at their orchards a number of which down around Polk County—strangely enough, near the Lake Alfred experiment station—very obviously have been abandoned and, obviously, as long as there are

any green leaves on the trees, there are burrowing nematodes living in the roots.

Obviously, if there is any orchard grove to spread to, they are going to spread. So it would appear to me that despite the fact that here is an economic unit that has probably deteriorated in value from perhaps—I don't know, but in the neighborhood of at least $1,000 an acre to a place where it is worth less than nothing because of the expense of bulldozing the trees out and that sort of thing, however, if they are going to control this thing, measures on a broader front than just research have to be entertained.

BOLL WEEVIL PROBLEM

Mr. WHITTEN. Certainly, I do not want my comment in any way to detract from the suggestion of our colleague from Washington. In many, many fields some further attention is going to have to be given to what he suggests here. I would point out again, however, some of the things in regard to the boll weevil, which make it highly questionable as to whether that would be a cure. The boll weevil is with us, and if all known means were used on every acre of cotton throughout the coming growing season, it would help with that one crop. But there is nothing to indicate that you wouldn't have the boll weevil all over again the next year. It is true that a tract of cotton that has not been using poisons would have some tendency to spread to adjoining areas. But if you had no such tracts of cotton, you would have to use poisons on the other areas anyway because they multiply so fast and they spread.

If it got to where you had eradicated it, and you found it in a small area, you could eradicate it again and there would be some basis for requiring it. As of now, there is no way to get rid of it. You can hold it back for the period it takes to develop an average crop. That is about the way the situation works.

(Discussion off the record.)

RESEARCH CONTRACTS

Mr. WHITTEN. Now, Dr. Shaw, with reference to contracting, I would like at this point in the record to show the number of contracts you have this year, who they are with, and trace back how long you have had each contract.

Dr. SHAW. We will supply that.

(The information is as follows:)

Agricultural research service contractors under title I, Research and Marketing Act

Contractor	Current contracts		Completed contracts		Remarks
	Date and period	Description of research	Date and period	Description of research	
American Meat Institute Foundation.	March 1954, 2½ years.	Effect of stabilized animal fats (inedible) on preservation of vitamin A and carotene in animal feeds and growth of chicks.	June 1950, 4 years.	Use of varying amounts of industrial fats in animal rations, prevention of rancidity in high fat feeds, use to prevent dustiness in feeds.	Only research organization with necessary facilities and experienced personnel willing to undertake job.
American Institute of Baking	June 1953, 2½ years.	Prevention of bread staling by incorporation of starch modifier in dough.	May 1950, 2 years.	Prevention of deteriorations and staling of bakery products.	Extension of earlier marketing contract to determine from utilization approach effect of component wheat parts in bread staling.
University of Arizona	June 1951, 4 years.	Study of economically processing alfalfa before dehydration to retain carotene and other nutrients.	October 1949, 4 years.	Amino acid content of selected food in southwestern United States.	Only organization known to have facilities in area for mass microbiological determination of amino acids in proteins.
Battelle Memorial Institute	August 1954, 6 months.	Evaluation of esters from furfural as plasticizers.	June 1949, 4 years.	Application of unexplored methods of separation to cleaning seed cotton.	Selected from among several possible contractors on the basis of equal performance at a lesser estimated cost.
Do			June 1953, 2 years.	Potential for fats and oils in drying oil uses.	Selected on the basis of past experience in the field as well as facilities for economically sound research.
University of California	May 1951, 4 years.	Thiamine and riboflavin requirements, persons over 50, adolescent boys, and amino acid requirements young women.			
Do	September 1950, 4 years.	Causes of loss in quality and yield of dried prunes and means of control.			
Do	June 1951, 4 years.	Chemical changes involved in discoloration strawberry preserves and means of inhibition.			
University of Connecticut	January 1954, 2 years.	Nutritive value of inedible fats for young dairy calf.	October 1949, 4 years.	Feeding value for milk production of alfalfa as hays and pelleted hay.	Only organization located with necessary facilities and experimental animals who could undertake work at time required.
Do	January 1953, 2 years.	Value of alfalfa as dairy cattle feed.	November 1950, 1 year.	Feeding tests to compare value of alfalfa as field-cured and artificially dehydrated chopped hay.	Series of studies contracted as result of developments indicated by original contract.
Do	do	Value of alfalfa as feed for dairy calves.	December 1951, 2 years.	Feeding tests pelleted alfalfa hay in rations and body storage of vitamin A.	

[illegible]	[illegible] years.	[illegible] cresing frictional properties cotton fibers and effect on yarn strength and processing.	[illegible] years.	[illegible] to cleaning and aiming lint cotton.	[illegible] complete facilities and experienced personnel.
Do	December 1952, 2 years.	Physical properties and methods of curing, seasoning and preserving bamboo.	March 1952, 2 years.	Correlation of strength of cotton fibers at different gage lengths.	Special spinning equipment available here that could not be obtained in other possible sources.
Do	May 1954, 2 years.	Different chemical preservation, seasoning and heat curing of bamboo.			
Colorado A. and M. College	September 1953, 3 years.	Improved procedures for baking potatoes of different specific gravity classes.	April 1948, 4 years.	Dehydration of sugar-beet tops for feedstuff for livestock and poultry.	Contractor specialized in all phases of sugar beet production and had proper background to carry out dehydration and analytical studies.
Do	January 1955, 2½ years.	Stability of vitamins E and K in market samples of dehydrated and sun-cured alfalfa meals.			
Columbia University	May 1952, 4 years.	Energy of requirements of women in selected physical activities.			
George Washington Carver Foundation (Tuskegee Institute).	December 1953, 4 years.	Availability of nutritionally important amino acids and food energy in selected foods.	February 1951, 4 years.	Amino acid content of selected foods in southern United States.	Only organization located with distinctive physical facilities and personnel needed for the chemical and microbiological assays for amino acids.
Do	June 1954, 2 years.	Determination of amino acid contents in selected foods.			
Drexel Institute of Technology	May 1954, 1 year	Yields and losses of selected foods purchased and prepared for institutional use.			
Doughnut Corporation of America.	May 1951, 4 years.	Evaluate dried honey, skim milk in baking mixes.			
Emory University	June 1954, 2½ years.	Methods for converting resin acids into epoxides, glycols, and polybasic acids for utilization of pine gum.			
Fabric Research Laboratories, Inc.	do	Improvement draping properties of cotton by varying yarn and fabric structures and application of selected finishing agents.	June 1949, 4 years.	Investigate fundamental physical properties of cotton fibers upon fiber drape.	Contractor pioneered research in cotton fabrics and had facilities and personnel experienced to develop draping properties.
Georgia Tech. Research Institute.	June 1953, 2 years.	Development of practical process to convert alphapinene (from turpentine) to pinic acid for use as synthetic lubricants, etc.	February 1951, 2 years.	Present and potential uses, plant material for industrial purposes to diversify agriculture.	Because of contractor's expressed interest undertook work on a nonprofit basis resulting in at least equal performance with less cost to Government.
Do			March 1952, 2 years.	Relationships between different cottons and their response to acetylation.	Facilities and experienced personnel in fibrous acetylation of cotton promised equal performance at less cost.
Do			June 1952, 2 years.	Survey of possible needs for agricultural plant materials for industrial utilization.	As a result of 1951 contract above, study directed toward development of chemurgic utilization of agricultural materials as basis for diversified crops.

Agricultural research service contractors under title I, Research and Marketing Act—Continued

Contractor	Current contracts		Completed contracts		Remarks
	Date and period	Description of research	Date and period	Description of research	
University of Hawaii	November 1954, 3 years.	Improved methods of frozen and processed products from passion fruit and coconuts.	June 1951, 2 years.	Content of moisture, ascorbic acid and 3 B vitamins in 50 principal foods produced in South Pacific Islands.	To minimize cost of special shipping, geographically necessary to conduct this study in Pacific area. University of Hawaii only qualified organization available.
Do	June 1951, 4 years.	Develop efficient means preparing and storing papaya and guava purees.	August 1952, 3 years.	Determination of nutrients in selected foods from islands of South Pacific.	Do.
Do			June 1953, 2 years.	Determination of crude fiber in selected foods from islands of South Pacific.	Do.
Herty Foundation Laboratory	March 1953, 2 years.	Potentiality of bamboo fiber as pulp for paper industry.			
Do	June 1954, 2 years.	Extended research on bamboo fiber for paper on pilot plant scale.			
The Hoover Co	April 1954, 2 years.	Location cleaning of cotton carpets and development of specialized equipment therefor.			
College of the Holy Cross	May 1953, 2 years.	Crystallization of beet sugar by radiation.			
University of Iowa	February 1950, 4 years.	Thiamine and riboflavin requirements of schoolchildren and young women.			
Do	January 1955, 3 years.	Isolation and identification of odor and flavor constituents of corn and cornstarch.			
University of Illinois	May 1951, 4 years.	Study of segment of thiamine and riboflavin requirements of adults, young women and adolescents.	June 1951, 2½ years.	Isolation of polymers and comparison with products from liquid and hydrogetated soybean oil and flavor reversion.	In addition to demonstrated interest, contractor could supply at least equal performance under more advantageous conditions to the Government than others.
Do	November 1951, 3½ years.	Use of alcohol-water injection to prevent valve sticking in farm tractors.			
Do	January 1955, 3 years.	Wetting characteristics of starches.			
Do	December 1954, 2½ years.	Composition and structure of Sphingolipids from soybean phosphatides.			
Iowa State College	June 1951, 4 years.	Improvement of microbiological methods for counting *Salmonella* organisms in egg products.	October 1949, 4 years.	Basic methods for home cooking different cuts of low grade beef.	On organization located with necessary facilities especially with access to animals of known

Iowa State College	June 1951, 4 years.	Improvement of microbiological methods for counting *Salmonella* organisms in egg products.	October 1949, 4 years.	Basic methods for home cooking different cuts of low grade beef.	On organization located with necessary facilities especially with access to animals of known origin.
Do	December 1951, 4 years.	Investigation of food consumption of rural families in North Central States.	do	Develop means of producing processed eggs with improved functional properties.	Contractor especially fortified with expert knowledge of the demands that industry makes of egg products.
Do	February 1954, 2½ years.	Evaluation of concentrates of trichlorethylene-extracted oilseed meals to isolate and identify toxic factor.	June 1950, 3 years.	Develop improved methods of measuring quality changes in shell eggs.	Do.
Do	June 1954, 1 year.	Yields and losses of selected foods purchased and prepared for institutional use.	June 1951, 1 year.	Data on serviceability of sheetings of different fiber composition and construction.	Determined statistical work could be performed equally well at less cost with this contractor.
Do			May 1952, 1½ years.	Assay tests for toxicity of trichlorethylene-extracted (TESOM) soybean meal to calves and guinea pigs.	TESOM produced in small processing plants in 3 major areas. Contractor had excellent facilities, personnel and background in the problem, and selected to carry on work simultaneously in Iowa.
Do			March 1953, 1½ years.	Comparison of molecular shapes of dextrans by flow birefringence measurements.	Contractor highly experienced in the technique of investigating properties of amylaceous carbohydrates similar in chemical composition to the dextrans and could therefore perform at less cost.
Kansas State College	October 1953, 4 years.	Development methods commercial cake formulation to use significantly higher level of honey.	June 1950, 2 years.	Develop new and improved uses of apiary products.	Contractor only organization located with complete baking facilities as well as laboratory facilities who could undertake this problem in the fundamental aspects of baking research.
Do			February 1952, 1½ years.	Use of honey in manufacture of cookies and armed forces rations.	Research under above contract expanded to include use of honey in baking industry on 2 basic types of bake goods.
Arthur D. Little, Inc	November 1952, 3 years.	Study of food issues, losses and nutrient content of diets in 4 institutions.	August 1949, 1 year.	Survey utilization possibilities for proteins from peanuts and oilseed.	Contractor able to give equal performance at substantially less cost to the Government than others .
Lowell Technological Institute Research Foundation.	June 1953, 1½ years.	Processing qualities of wool from yearling Targhee fleeces.	June 1948, 4 years.	Use and development of cotton warp yarn for carpets.	Contractor possessed necessary special processing equipment and was strategically located with respect to large units of the carpet industry.
Do			June 1952, 2 years.	Study of economics of wool grease recovery in United States.	Only known organization with necessary experienced staff and facilities to undertake study at the time.

Agricultural research service contractors under title I, Research and Marketing Act—Continued

Contractor	Current contracts		Completed contracts		Remarks
	Date and period	Description of research	Date and period	Description of research	
Louisiana State University	November 1954, 2 years.	Effect of delay in milling upon milling characteristics of sugarcane and yield and quality of juice for sugar.	October 1949, 4 years.	Investigate cooking quality and flavor of shell eggs.	No other laboratory in area could be located with necessary research staff and facilities.
Do			June 1950, 3 years.	Improve technology of processing sugarcane and beets for standard and special-type sugars and sirups.	The only equipment available and suitable for carrying out this research was that of the Audobon Sugar Factory of the Louisiana State University.
Do			December 1952, 2 years.	Development of laboratory milling test for selection of sugarcanes of improved processing quality.	Do.
University of Maryland	March 1952, 4 years.	To improve quality of processed tomato products from eastern grown tomatoes.			
Massachusetts Institute of Technology.	June 1952, 2½ years.	Factors affecting preignition of alcohol fuels used for power boost in high-compression engines.			
Do	June 1953, 2½ years.	Sterilization by electron radiation of shell eggs and egg products.			
Do	June 1954, 2½ years.	Determine toxic effects or protein changes in dried whole eggs by ionizing radiation.			
Michigan State College	May 1951, 4 years.	Feeding tests to evaluate B_{12} and growth factors in grain fermentation products.	May 1949, 4 years.	Investigate effect of aging on tenderness and eating quality of low-grade cow beef prepared by various methods of cooking.	In addition to experienced personnel and special laboratory facilities, contractor has access to fresh meat of quality needed for this study.
Do	March 1952, 4 years.	Methods and procedures for obtaining better quality maple sap.	June 1950, 3 years.	Determine effect of various fungicidal sprays and cooling treatments on quality of canned and frozen sour cherries.	Only organization located with necessary facilities and experienced personnel who would have fresh fruit of known history available.
Do	August 1952, 4 years.	Processing sour cherries to ascertain variations, commercial techniques on firmness and quality, and effect of additives.	June 1950, 4 years.	Develop new procedures for ripening and processing eastern-grown freestone peaches.	Do.
Do	April 1954, 4 years.	Improvement of maple sirups by eliminating micro-organisms and fermentation in taphole and storage.			
University of Michigan	March 1952, 4 years.	Techniques for processing sugar beets with minimum water and contamination to sucrose.			
			June 1951, 3½	Comparison chemical composi-	Because of the specialized expe-

University of Michigan	March 1952, 4 years.	Techniques for processing sugar beets with minimum water and contamination to sucrose.			
University of Minnesota	May 1951, 4 years.	Conversion of vegetable and animal byproducts and wastes into new feedstuffs and feeding values.	June 1951, 2½ years.	Comparison chemical composition of water-soluble constituents of wheat flour with those in bread to develop information how affect staling of bread and bakery products.	Because of the specialized experience in the field of carbohydrate structural chemistry, this contractor could perform equally well at less cost than others.
Do	December 1951, 4 years.	Solubility studies of fatty acids, esters, and alcohols.	October 1949, 4 years.	Determination of fatty acids in foods selected for effects of processing upon nature of the fat content.	Because of past experience investigating the physiological importance of fatty acids, contractor was only organization located available for this study.
Do	April 1953, 2½ years.	Chemical properties of toxic protein isolated from untoasted hexane-extracted soybean oil meal.	May 1952, 2 years.	Quantitative studies on Toxicity of trichlore-thylene-extracted (TESOM) soybean oil meal to young cattle, swine, and poultry.	TESOM produced in small processing plants in 3 major areas. Contractor had excellent facilities, personnel, and background in the problem, and selected to carry on work simultaneously in Minnesota.
Do	Nov. 1953, 2½ years.	Chemical structure of plant gums and mucilages and general properties which make them industrially useful.			
Do	Dec. 1953, 3 years.	Application of bioassay to isolation of toxicity in trichlorethylene-extracted oilseed meals.			
National Academy of Sciences	June 1952, 4 years.	Summaries of recommended nutrients for farm animals.	June 1952, 3 years.	Survey of food and nutrition research in the United States.	In addition to their keen interest and past experiences this contractor could perform with a minimum of overhead and no profit.
Do	June 1953, 2½ years.	Data on composition of cereal grains and forages.			
National Analysts, Inc	June 1954, 1 year	Survey of furniture and textile furnishings used in homes.	January 1953, 3 years.	Survey of use foods in the home (Indianapolis, Ind. and Birmingham, Ala.).	Contractor able to give equal performance at less cost to the Government than others.
Do	January 1955, 2 years.	Survey of food consumption, of households in United States, spring 1955.	August 1953, 6 months.	Computations of nutritive value of the per capita food supply, 1909–53.	Do.
University of Nebraska	June 1954, 2½ years.	Evaluation of corncob components as nutritive material in feeds for beef cattle.	March 1950, 4 years.	Development of reliable microbiological methods for isolation and enumeration of *Salmonella* organisms in eggs and egg products and determination of the pathogenicity of these organisms for humans.	In addition to experienced staff and excellent facilities, contractor strategically located with respect to poultry processors with *Salmonella* problems.
Do	June 1952, 4 years.	Studies of shelf-life of cutup poultry.			
Do	do	Segment of study on investigation of amino acid requirements of young women.			

Agricultural research service contractors under title I, Research and Marketing Act—Continued

Contractor	Current contracts		Completed contracts		Remarks
	Date and period	Description of research	Date and period	Description of research	
Universfty of Nebraska	September 1951, 4 years.	Investigation of requirements of young women of certain amino acids.			
Do	June 1951, 3½ years.	Characterization component controlling growth inhibitor on soybeans and raw soybean oil meals.			
North Carolina State College of Agriculture and Engineering of University of North Carolina.	March 1953, 2½ years.	Mercerization of cotton fibers without tension.	June 1948, 4 years.	Determination of causes of formation of neps during textile processing and influence and methods of control of neppiness in opening, picking and carding processes.	The only organization that could be located with experienced staff and adequate personnel with appropriate entree to study nepping in mill operation.
Do			do	Adaptation of cotton yarns for tricot knitting machines.	The only organization that could be located with appropriate facilities and trained personnel.
Do			June 1951, 2½ years.	Development of apparatus and standardized procedure for determining tendency of various lint cottons to form neps during processing.	As a result of the contract on nepping mentioned above, this contractor had to develop an instrument capable of predicting the nepping possibilities of yarn.
New York State Agricultural Experiment Station.	September 1954, 4 years.	Improvement of peach purees from eastern-grown peaches.			
New York State College of Agriculture.	March 1953, 2 years.	Improvement of potato chips			
Ohio Agricultural Experiment Station.	November 1954, 3½ years.	Improvement of Provolone and Romano cheeses.	January 1951, 3 years.	Practical tests with farmers to test antidetonant mixtures in tractors and evaluate the use of alcohol-water injection in farm tractors.	Contractor's past experience in motor fuels evaulation and particularly well equipped motor fuels research laboratory instrumental in selection over other possible contractors.
Pennsylvania State University (formerly Pennsylvania State College).	June 1953, 3 years.	Improved procedures for pressure-cooking potatoes.	February 1951, 4 years.	Study of utilization of ascorbic acid by women 18 to 30 years of age.	In addition to past experience in human metabolisms, contractor only organization located with sufficient research facilities for this study.
Do	March 1952, 3 years.	Aerobic oxidation of dairy wastes	March 1951, 3 years.	Research on vacuum nondestructive distillation of fatty acids, esters, and alcohols.	In addition to prior experience contractor could perform equally well at less cost to the Government.
Do	April 1953, 3 years.	Pollution effects of dairy wastes and abatement by laboratory-developed aeration process.			

Do	April 1953, 3 years.	Pollution effects of dairy wastes and abatement by laboratory-developed aeration process.			
Do	June 1954, 3 years.	Heat transfer properties of fatty acids.			
University of Pennsylvania	April 1953, 3 years.	Determination of organic peroxides (from inedible animal fats).			
St. Luke's Hospital	June 1954, 1 year.	Yields and losses of selected foods purchased and prepared for institutional use.			
University of Tennessee	October 1953, 2 years.	Properties of gossypol to develop processing to improve quality of commercial cottonseed meal and oil.	June 1948, 4 years.	Development of an improved instrument to determine tensile strength of cotton fibers.	Past experience in developing textile equipment as well as completely equipped laboratory and machine facilities prime factor in selection of contractor.
Do	January 1954, 2 years.	Measurement of elongation for tenacity of cotton fibers.	June 1949, 4 years.	Investigation of optimum conditions for processing prime cottonseed by the hydraulic pressing method.	Only organization located with appropriate facilities and experienced personnel for this study.
Texas State College for Women	July 1954, 2½ years.	Treatment of cotton with organic materials to improve cotton textiles.			
Texas Agricultural Experiment Station	April 1953, 2 years.	Determination of pantothenic acid content of selected foods.	November 1949, 4 years.	Determination of basic methods for home cooking for different cuts of low-grade meats from grass-fed cow and other beef animals differing in age, sex, and finish.	In addition to experienced personnel and special laboratory facilities, contractor has access to fresh meat of quality needed for this study.
Do	June 1954, 1½ years.	Research on feeding to improve quality of cow beef.	December 1949, 4 years.	Determination of folic acid and moisture content of selected foods widely produced in Texas and southeastern part of United States.	Only organization located with appropriate facilities and experienced personnel in microbiological determinations.
University of Texas	December 1953, 3 years.	Distribution of unsaturated fatty acids in blood serum of dogs for correlation with fatty acid intake.	December 1948, 4 years.	Investigation of fatty acid requirements of normal infants and small children.	Only laboratory located that has gone beyond studies of fat metabolism in laboratory animals in experimental work in human studies.
Do	December 1953, 4 years.	Unsaturated fatty acid requirements of normal infants.			
Textile Research Institute	May 1952, 2 years.	Evaluation of new techniques for measuring cotton fibers to predict processing behavior.	December 1948, 4 years.	Determination whether worsted fabrics of higher quality can be produced from medium grade wools through introduction of controlled delays in processing steps and means of accelerating desirable changes.	In addition to ability to perform equally well at less cost, this contractor can enlist the cooperation of a wool processing concern for actual demonstration purposes.
Do	April 1953, 2½ years.	Investigation of resting of wool in processing by different systems for procedure for mill practice.			

Agricultural research service contractors under title I, Research and Marketing Act—Continued

Contractor	Current contracts		Completed contracts		Remarks
	Date and period	Description of research	Date and period	Description of research	
Textile Research Institute	January 1955, 2½ years.	Investigate X-ray diffraction to develop method for determining cotton cellulose crystallinity.			
Institute of Textile Technology	June 1951, 2½ years.	More effective methods and materials for dry cleaning cotton.	June 1948, 4 years.	Determine factors affecting adhesion of soils on cotton and developing treatments to impart greater resistance to soiling and improvement of properties for ease of soil removal.	In addition to ability to perform equally as well as other competitive contractors has entree to member mills for commercial trials.
Do			June 1949, 1½ years.	Comparison of methods of measuring "drag" of cotton fibers.	Contractor demonstrated ability to perform equally well at less cost to the Government.
Utah State Agricultural College	January 1955, 2½ years.	Variation of constituents in individual sugar beets for representative sample for investigation processing qualities.	June 1948, 3 years.	Development of methods for measuring the raw stock maturity in green peas.	Contractor selected because of previous exploratory work especially qualified scientists and vegetable gardening specialists, and location in an important pea-producing area.
Do	May 1954, 3 years.	Improved frozen lima beans through methods developed for selection raw lima beans.	June 1952, 2 years.	Study of relationship between color and maturity in sweet corn.	Only organization in the area of increasing importance to sweet corn production in position to perform all phases of the work, with complete facilities for handling, storage, and processing raw materials.
United States Sugar Corp	February 1954, 2 years.	Commercial scale evaluation separating sugarcane bagasse into pith and fiber.			
Virginia Polytechnic Institute	September 1954, 2½ years.	Statistical techniques for sensory testing processed foods.			
State College of Washington	January 1955, 2 years.	Lysine contents of wheats	February 1950, 4 years.	Investigation of the cooking quality and flavor of shell eggs.	In addition to demonstrated interest, contractor could supply at least equal performance under more advantageous conditions to the Government than others.
Do	December 1951, 4 years.	Effects of antibiotics on times and temperatures required for commercial canning vegetables.	June 1953, 2 years.	Survey of use of foods in the home (Everett, Wash.).	Unique advantage to Government as survey was being conducted by contractor independent of this contract, and information on food use was included at nominal cost which will provide supplementary information for west-coast area.
Wisconsin Alumni Research Foundation	June 1952, 4 years.	Evaluation of feed supplemental value of experimentally produced antibiotics by chick			

Wisconsin Alumni Research Foundation.	June 1952, 4 years.	Evaluation of feed supplemental value of experimentally produced antibiotics by chick tests.			
University of Wisconsin	January 1952, 4 years.	Segment of study on thiamine and riboflavin requirements of persons over 50.	February 1950, 4 years.	Investigation of the requirements of schoolchildren and young women for thiamine and riboflavin.	Unusual special facilities and especially trained personnel for conducting biochemical metabolic studies.
Do	April 1953, 4 years.	Amino acid requirements of women over 30.			
Do	November 1953, 2 years.	Improving product yields in fermentations.			
Do	June 1954, 3½ years.	Study microbial flora of Swiss cheese regarding gassy defects.			
Yale University	June 1954, 1 year.	Yields and losses of selected foods purchased and prepared for institutional use.			

this contract, and information on food use was included at nominal cost which will provide supplementary information for west-coast area.

Mr. WHITTEN. Now, Dr. Shaw, I will be glad to have your statement on how your contract research is handled.

Dr. SHAW. Would you like that placed in the record or would you prefer that I discuss it?

Mr. WHITTEN. I would like for you to discuss it.

Mr. HORAN. Does that come under you?

Dr. SHAW. Up until this last year, you will recall, we had the contract authority in utilization research and marketing research. The recent Congress passed a law that brought that contract authority to all of our fields of work, but up until now we have only had contract work on the utilization research which is under me, and the marketing research which is under Mr. Wells.

Mr. HORAN. I am interested in this marketing research and expect to interrogate Mr. Wells when he is before us.

DURATION OF CONTRACTS

Dr. SHAW. In the contracts that we have under way, we do contract for a definite period of time. The authority in the law is that we may contract up to 4 years for the completion of a piece of research. The normal practice, if you are going to contract for a job that is estimated to take 4 years to complete is to contract for the entire amount, but to provide for certain periodic payments over the 4-year period. That may be one of the factors in terms of the indication that we are putting the same amount of money at a given institution year by year. If we let the contract for a 4-year period, it would be a normal practice that during that 4-year period, we would have had an annual payment that was somewhat similar each of those 4 years.

We do contract for a definite period of time and we do expect the project to come to completion and it is not normal practice to reinstitute that contract. There may of course be another contract with the same institution in some other phase of the same general problem.

Mr. Spencer is our contracting officer and I think he can give you most of the detailed information that the chairman asked for.

RECIPIENTS OF CONTRACTS

Mr. HORAN. Might I inquire: This is a cooperative effort?

Dr. SHAW. In terms of contracts, we are normally contracting for something we want to have done and it would not necessarily involve cooperation. In other words, we go out to get a job of research done and we contract with the individuals or the institution that we think can do the best job under the contract. So, normally, it would not require cooperation, but in several instances, at least, the fellow whom we do make a contract with is sufficiently interested in it himself so that he will put in some of his own funds to help in the completion of that work.

Mr. HORAN. In this United Fruit & Vegetable contract, are they supplying part of the funds for their project?

Dr. SHAW. Could you comment on that, Mr. Spencer?

Mr. SPENCER. I cannot comment on it in detail. They are helping to support it; yes, sir.

Mr. HORAN. Do you have some contracts also with the Washington State Apple Commission?

Dr. SHAW. Yes, sir.

Mr. HORAN. Are they supplying part of the funds?

Mr. SPENCER. I do not know that they are directly supplying part of the funds. They are giving us, I think, a better price than we could get if we went into normal commercial channels to get that job done.

Mr. HORAN. If you will permit me to pursue this, I think it is valuable. May I go ahead?

I am interested in contractual authority wherever it can be employed to advantage. I am disturbed about building up an unwieldy civil-service list that creates a problem when severance is indicated or when a project is finished. For that reason, I would like to be a friend of the principle of contractual authority. More than that, I think we get the maximum of benefit from all contributing parties when we have a maximum of cooperation, not only between industries and Government but between various levels of Government.

Dr. SHAW. We have felt that the contract authority was very helpful to us in enabling us to (1) utilize the facilities of institutions that had special pieces of equipment, special devices and so on, that we did not have, and thereby would have to purchase, or (2) to use special talents of individual investigators. It has enabled us, I am sure, in many cases, to go out and do a piece of research that was only a one-time proposition and get through with it and not have to employ any permanent staff to do it, and it has contributed to what I have understood the objectives of Congress to have been in the prosecution of contracts.

I think, if Mr. Spencer would give some of the details on the number of contracts we have had, how many we have had renegotiated with a given institution, that it might be helpful at this stage of the discussion.

CRITERIA FOR CONTRACTS

Mr. SPENCER. I would like to comment briefly on the criteria that we apply to these contracts just as background for what I want to say about the figures. First, of course, we apply the requirements of the Research and Marketing Act that we do not contract for any research unless it can be done quicker, better, or cheaper by a contractor than it can be done with our own staff and facilities. Then, our next objective is to get the best possible job. We have no formula for determining whether the work is done at land-grant colleges or some other educational institution, or by private concerns. The objective is to get the institution that can do the particular piece of work best. Then, of course, along with that objective goes the idea of getting the best price we possibly can consistent with a satisfactory job.

We do not try to string out a project any particular length of time. Neither do we try to cut it off arbitrarily in order to say we have to be done with this work in a certain length of time. We draw the contract ordinarily not for the 4-year maximum which is permitted by the law, but for the maximum period which we think it should take to do the job. Our contracts at the present time average about a 3-year period.

NUMBER AND VALUE OF CONTRACTS

We have in effect now in the Agricultural Research Service 99 contracts. The total amount involved is $2,199,821 and the contract years involved are 283. That means that our average annual cost per contract is just over $7,700 which, I think, tends to some extent to indicate that no institution which contracts with us is maintaining a large staff on the basis of the contract it has with us.

We do have a number of institutions which have more than one contract. That comes about for one of several reasons: That is, either there has been a development or a necessity for continuance of the subject of the original contract which could not be anticipated when the original contract was executed, or it may be that the work, although with the same institution, is in an entirely unrelated area. For example, at the present time we have with the University of Nebraska four contracts. One of those is on the subject of utilization of corncobs for feed. And then there is one involving microbiological determinations of fresh poultry. Another one deals with the investigation of amino acid requirements of adults; and a fourth has to do with expanded uses for soybean proteins. So there is not an overlapping function in those contracts. They are actually four different areas.

Another reason why contracts may be continued or more than one contract entered into with the same institution, is that this particular institution may have a staff and physical facilities which are not available anywhere else and, as you know, there is enough specialization now in many of our colleges to make this a thing that quite often happens.

Mr. HORAN. They also have the problem.

Mr. SPENCER. That is true.

Mr. HORAN. In other words, if it were purely a Federal activity, you would have to move all of your equipment and personnel to the base of the problem; is that not true?

Mr. SPENCER. Yes, and we might have to have a great deal of expensive equipment for a one-time job. We might need this equipment for 1 year. We might complete that research and not need that particular equipment again for several years.

When you consider the price that goes into that sort of equipment, we have figured that it is better to pay somebody else to do it than to equip ourselves to do it.

RESEARCH CONTRACT FOR UTILIZATION OF CORN COBS

Mr. MARSHALL. You made some comment a moment ago about feeding corn cobs in Nebraska. We have had 1 of our 4 regional laboratories in Illinois, at Peoria, doing research work on the use of corn products. Is there any duplication of these two items?

Mr. SPENCER. I would prefer, Mr. Marshall, if we may, to wait until Dr. Hilbert is here to discuss that point. As some of the members of the committee know, I am not a research man and I am unable to answer that from my own knowledge, but I am sure, from the review that these are subjected to, that duplication would not be involved. But Dr. Hilbert can discuss that in detail when he is here.

Dr. SHAW. While I cannot be certain, I think that that contract is let by that laboratory to Nebraska. It is in prosecution of their research program.

Mr. MARSHALL. There is coordination of the work? You are not doing something in Nebraska that is being duplicated in Peoria?

Dr. SHAW. It is the group at Peoria that is supervising and letting the contract with Nebraska to help in advancing their work.

Mr. HORAN. That would be a good question for Dr. Hilbert to enlarge on.

Mr. SPENCER. That is correct; that is one of the projects of the Northern Laboratory.

If I might add just a word as to the thought that contracts are sometimes extended in order to keep a force employed by the contractor, I certainly would be the last to deny that the contractor is anxious to keep his staff employed, if that is possible. However, it is a definite part of our policy, when a contract comes up for continuance, or renewal, to subject it to just the same review as we do a brand new contract; that is, in other words, is the work necessary? Is contracting the best way to do it? And is this contractor the best one for the job?

GRAIN STORAGE RESEARCH FOR COMMODITY CREDIT CORPORATION

Mr. MARSHALL. Dr. Shaw, the Commodity Credit Corporation at times requested that research be done on items affecting the storage in bins. Has your Department done any of that research work for Commodity Credit?

Dr. SHAW. We have done some research work in two directions for the Commodity Credit Corporation. One has been on helping in the design of storage bins; and secondly on methods of fumigation or treatment of the grains so as to prevent insect damage.

Mr. MARSHALL. Is the Commodity Credit Corporation reimbursing you for the expense of that type of research?

Dr. SHAW. There has been some reimbursement for our engineering studies on design. It is anticipated that we will receive a total of $50,000 from the Commodity Credit Corporation for research on farm storage of grains and related commodities in fiscal year 1955. It is my impression that most all of that is on the engineering work.

Dr. KNIPLING. That's right, Dr. Shaw.

Mr. MARSHALL. What do you estimate you will be receiving from them this next year?

Dr. SHAW. We will not receive anything, I think.

Mr. MARSHALL. Do you want to review that further and check it?

Dr. SHAW. No arrangements have been made for continuing such research in fiscal year 1956.

Mr. MARSHALL. Have you published any pamphlets in regard to your research in connection with the Commodity Credit storage, engineering, or use of insect control?

Dr. SHAW. I am not certain that we have, Mr. Marshall. We have furnished the reports to the Commodity Credit Corporation on our studies that we have made for them and I am not certain that we have published any pamphlets. When we have our engineering group here in a day or two, we can bring that question up. I will see to it that it is brought up and we can have a more complete reply.

ADMINISTRATION OF RESEARCH PROGRAMS

Mr. MARSHALL. Our investigators make this comment:

It was disappointing to learn the attitude of high administrative USDA officials to the effect that only scientifically minded people are equipped to understand the extent and the need for appropriated sums for research. These officials indicated that laymen should be extremely wary of making encroachments in the methods pursued in the scientific community. While it may be agreed that laymen are faced with much difficulty in evaluating the methods used in research, laymen—business managers, administrators—certainly can make and be solely responsible for, from the viewpoint of appropriate funds and the public needs, a reliable appraisal of the financial costs of the planned research objectives within the USDA, and the best interests of the agricultural economy within the USDA and the best interests of the agricultural economy..

The need exists to have competent administrative personnel supervising, and perhaps, policing the activities of the researchers who, although men of respect and eminence, may be prone to forget that there is a bottom to the Treasury.

Would you comment on that?

Dr. SHAW. It may be that that comment comes from a discussion with me in which I had made the statement that in terms of myself and our program directors, such as Dr. Moseman and the other four that are in our office, and their branch chiefs running research who were all scientists. I said I thought that was important in the prosecution of research, having that kind of an overall advisory staff of scientists supervising the research. We did, at the same time feel it was necessary to have expert administrative guidance. I have an assistant administrator, Mr. Spencer, who is in charge of our management activities in the Agricultural Research Service. We have administrative assistants with each branch to look into the expenditures of our research program, our operations, to see if they are sound from a management standpoint. But I felt it was important to have the scientists on top and the administrator as his assistant rather than the other way around. I would not want to give any impression that I do not feel it is important to have administrative people helping us with our work but I do feel in terms of having a successful research program that it is necessary to have scientists in the top positions. I do not want to condemn the activities of anyone else, but I am satisfied that one of the reasons why we have personnel that stay with us and are happier in their work in science than is the case in some other areas of research is because we have the scientists on top.

PROGRAM INSPECTION AND INTERNAL AUDIT

Mr. MARSHALL. Thank you, Dr. Shaw. You made comment earlier this afternoon concerning your plans for setting up an internal audit group. Our investigators comment on that. I am glad to see that you are taking those steps. Apparently, this was one of the things that they felt would be necessary to have, a good, administrative control over the expenditure of funds. Might I ask you how soon you are going to put this into effect?

Dr. SHAW. We employed our man in charge of it about last March, but we did not get the office set up until about July 1, 1954. We have been examining as the first order of business some of our fiscal operations. On the research program side, my plans are that we will have an orderly procedure not known, of course, to the research people, but an orderly procedure so that we will have covered our

entire research program within a period of 5 years. In other words, I am going to do it on a spot basis in this branch and that branch and the other one. But I am going to do it on an orderly basis, too, so I will have examined all work within a period of 5 years to give me an independent evaluation. These are administrative people who are looking into this.

Mr. MARSHALL. Judging from what our investigators found, this could very easily provide for some saving of the taxpayers' money.

Dr. SHAW. I hope anything we are doing which is not justified will be cut out. I do not know that I can guarantee to you that there is going to be any saving of money. As it was stated to you before, there are 10 problems in research for every 1 for which we have money.

Mr. MARSHALL. Perhaps a better way to have said this was that it will enable you to make use of funds that are now being put to good use in other places where there is need.

Dr. SHAW. I am satisfied myself that it is going to contribute to more efficient use of the funds that we have.

Mr. MARSHALL. Thank you, Dr. Shaw. We will now proceed to the first appropriation under your supervision, "Salaries and expenses."

SALARIES AND EXPENSES

Amounts available for obligation

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate		$67,367,579	$69,263,000
Reimbursements from non-Federal sources		3,695,400	4,288,800
Reimbursements from other accounts		11,583,756	16,519,720
Obligations incurred		82,646,735	90,071,520
Comparative transfer from—			
"Agricultural Marketing Act, Agriculture":			
Direct appropriation	$303,748		
Reimbursements from other accounts	1,000		
"Salaries and expenses, Office of Administrator, Agricultural Research Administration"	350,819		
"Salaries and expenses, Office of Experiment Stations, Agricultural Research Administration":			
Direct appropriation	355,410		
Reimbursements from other accounts	9,800		
"Virgin Islands agricultural program, Office of Experiment Stations, Agricultural Research Administration":			
Direct appropriation	95,855		
Reimbursements from other accounts	3,710		
"Research on agricultural problems of Alaska, Office of Experiment Stations, Agricultural Research Administration"	269,966		
"Salaries and expenses, Bureau of Human Nutrition and Home Economics, Agricultural Research Administration":			
Direct appropriation	1,391,529		
Reimbursements from non-Federal sources	2,528		
Reimbursements from other accounts	4,543		
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration":			
Direct appropriation	26,528,339		
Reimbursements from non-Federal sources	2,525,350		
Reimbursements from other accounts	809,282		
"Salaries and expenses, Bureau of Dairy Industry, Agricultural Research Administration":			
Direct appropriation	1,636,897		
Reimbursements from non-Federal sources	296		
Reimbursements from other accounts	47		
"Salaries and expenses, Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration":			
Direct appropriation	7,491,825		
Reimbursements from non-Federal sources	1,425		
Reimbursements from other accounts	16,748		

Amounts available for obligation—Continued

	1954 actual	1955 estimate	1956 estimate
Comparative transfer from—Continued			
"Salaries and expenses, Bureau of Plant Industry, Soils, and Agricultural Engineering":			
Direct appropriation	$11,263,757	.....	.....
Reimbursements from non-Federal sources	15,477	.....	.....
Reimbursements from other accounts	139,682	.....	.....
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration":			
Direct appropriation	11,685,863	.....	.....
Reimbursements from non-Federal sources	130,896	.....	.....
Reimbursements from other accounts	24,935	.....	.....
"Salaries and expenses, Bureau of Agricultural Economics":			
Direct appropriation	1,191,339	.....	.....
Reimbursements from non-Federal sources	128	.....	.....
Reimbursements from other accounts	16,957	.....	.....
"Salaries and expenses, Forest Service":			
Direct appropriation	178,459	.....	.....
Reimbursements from other accounts	600	.....	.....
"Forest roads and trails, Forest Service"	2,000	.....	.....
"Conservation operations, Soil Conservation Service":			
Direct appropriation	618,393	.....	.....
Reimbursements from non-Federal sources	4,820	.....	.....
Reimbursements from other accounts	3,435	.....	.....
"Salaries and expenses, marketing services, Production and Marketing Administration":			
Direct appropriation	623,682	.....	.....
Reimbursements from other accounts	4,175	.....	.....
"Resources management, Bureau of Indian Affairs"	62,070	.....	.....
"Research and development, Army"	$369,965	$377,500	.....
"Operating expenses, Atomic Energy Commission"	95,000	95,000	.....
Comparative transfer to "Salaries and Expenses, Office of Information, Agriculture"	−3,430	−3,500	.....
Total obligations	68,227,320	83,115,735	$90,071,520

NOTE.—Reimbursements from non-Federal sources above are from proceeds of sales of charts (7 U. S. C. 1387) and personal property (40 U. S. C. 481 (c)), from payments by non-Federal agencies for overtime work and travel performed at meat packing establishments and veterinary biological establishments and for animal and plant quarantine inspection (5 U. S. C. 576; 7 U. S. C. 394, 396), from cooperating State, county, municipal, and private organizations for soil and water conservation work (16 U. S. C. 590a), and from refunds of terminal leave payments (5 U. S. C. 61 (b)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
1. Research:			
(a) Crop research	$11,576,121	$12,446,000	$13,225,000
(b) Farm and land management research	5,961,668	6,524,000	6,774,000
(c) Livestock research	5,404,417	5,692,000	6,350,000
(d) Administration of payments to States, and Territorial research	729,913	732,000	757,000
(e) Human nutrition and home economics research	1,352,527	1,426,000	1,426,000
(f) Utilization research	7,955,783	9,002,000	9,152,000
Subtotal	32,980,429	35,822,000	37,684,000
2. Plant and animal disease and pest control:			
(a) Plant disease and pest control	8,960,955	8,972,000	8,582,600
(b) Animal disease and pest control	8,409,929	8,717,579	8,671,400
Subtotal	17,370,884	17,689,579	17,254,000
3. Meat inspection	14,160,173	14,325,000	14,325,000
4. Obligations under reimbursements from non-Federal sources	2,680,920	3,695,400	4,288,800
Total direct obligations	67,192,406	71,531,979	73,551,800

Obligations by activities—Continued

Description	1954 actual	1955 estimate	1956 estimate
Obligations Payable Out of Reimbursements From Other Accounts			
1. Research:			
(a) Crop research	$74,436	$38,600	$38,600
(b) Farm and land management research	90,030	61,600	61,600
(c) Livestock research	71,401	41,800	41,800
(d) Administration of payments to States, and Territorial research	13,510	3,500	3,500
(e) Human nutrition and home economics research	4,543	356	
(f) Utilization research	16,748	15,700	7,420
Subtotal	270,668	161,556	152,920
2. Plant and animal disease and pest control:			
(a) Plant disease and pest control	26,318	16,700	16,700
(b) Animal disease and pest control	213,500	10,220,000	15,220,000
Subtotal	239,818	10,236,700	15,236,700
3. Meat inspection	343,349	811,800	812,100
4. Other services performed	181,079	373,700	318,000
Total obligations payable out of reimbursements from other accounts	1,034,914	11,583,756	16,519,720
Total obligations	68,227,320	83,115,735	90,071,520

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Summary of Personal Services			
Total number of permanent positions	11,723	12,058	12,513
Full-time equivalent of all other positions	713	1,530	1,916
Average number of all employees	11,385	12,752	13,513
Number of employees at end of year	12,676	14,700	14,300
Average salaries and grades:			
General schedule grades:			
Average salary	$4,844	$4,826	$4,801
Average grade	GS–6.9	GS–6.9	GS–6.8
Personal service obligations:			
Permanent positions	$51,158,746	$53,813,600	$55,456,300
Positions other than permanent	2,002,654	5,928,800	6,806,000
Regular pay in excess of 52-week base	198,158	209,700	214,500
Payment above basic rates	2,435,075	3,431,900	4,070,500
Other payments for personal services	7,269	2,200	
Total personal service obligations	55,801,902	63,384,200	66,547,300
Direct Obligations			
01 Personal services	54,880,590	57,772,900	59,475,500
02 Travel	1,838,967	1,987,900	1,991,600
03 Transportation of things	247,556	267,100	273,300
04 Communication services	447,211	533,400	536,500
05 Rents and utility services	531,482	583,000	606,800
06 Printing and reproduction	433,105	475,600	483,100
07 Other contractual services	1,726,129	2,192,600	2,314,900
Services performed by other agencies	1,223,235	1,545,900	1,509,500
08 Supplies and materials	3,388,141	3,327,279	3,311,700
09 Equipment	1,357,157	1,490,200	1,559,400
10 Lands and structures	199,964	190,000	104,000
13 Refunds awards, and indemnities:			
Awards for employee suggestions	1,541	3,300	3,300
Brucellosis indemnities	554,505	548,500	548,500
Scrapie indemnities		40,000	40,000
Tuberculosis indemnities	284,473	325,000	325,000
Golden nematode control indemnities	28,294	30,000	
Federal tort claims	1,410	300	300
15 Taxes and assessments	124,747	137,000	145,400
Contingency fund		159,000	400,000
Subtotal	67,268,507	71,608,979	73,628,800
Deduct charges for quarters and subsistence	76,101	77,000	77,000
Total direct obligations	67,192,406	71,531,979	73,551,800

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	$921,312	$5,611,300	$7,071,800
02 Travel	15,489	105,300	118,500
03 Transportation of things	8,181	8,900	10,100
04 Communication services	12,283	30,300	26,500
05 Rents and utility services	3,198	6,300	4,700
06 Printing and reproduction	3,789	65,100	61,000
07 Other contractual services	40,326	68,900	73,800
08 Supplies and materials	25,258	444,056	113,320
09 Equipment	3,506	135,000	29,400
13 Refunds, awards, and indemnities: Brucellosis indemnities		5,100,000	9,000,000
15 Taxes and assessments	1,572	8,600	10,600
Total obligations payable out of reimbursements from other accounts	1,034,914	11,583,756	16,519,720
Total obligations	68,227,320	83,115,735	90,071,520

Analysis of expenditures

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward			$10,867,579
Obligations incurred during the year		$82,646,735	90,071,520
		82,646,735	100,939,099
Reimbursements		−15,279,156	−20,808,520
Obligated balance carried forward		−10,867,579	−11,630,579
Total expenditures		56,500,000	68,500,000
Expenditures are distributed as follows:			
Out of current authorizations		56,500,000	58,500,000
Out of prior authorizations			10,000,000

Mr. MARSHALL. At this place in the record we will insert pages 6 through 10, and 153 to 156 of the justifications.

(The pages referred to are as follows:)

Salaries and expenses

	Research	Plant and animal disease and pest control	Meat inspection	Total
Appropriation Act, 1955	$35,353,000	$17,689,579	$14,325,000	$67,367,579
Activities transferred in the 1956 estimates from:				
"Operating expenses, Atomic Energy Commission" [1]	+95,000			+95,000
"Research and development, Army" [2]	+377,500			+377,500
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of Information, Agriculture" [3]	−3,500			−3,500
Base for 1956	35,822,000	17,689,579	14,325,000	67,836,579
Budget estimate, 1956	37,684,000	17,254,000	14,325,000	69,263,000
Increase or decrease	+1,862,000	−435,579		+1,426,421

[1] For improvement of soil management and crop production through investigations with isotopes.
[2] For research on measures for controlling insects and other arthropods.
[3] For news-type photographic services.

Summary of increases and decreases, 1956

esearch:		
To strengthen forage production research to reduce cost of producing livestock and to aid in adjusting production to consumer demand ($354,000); to intensify research on cotton breeding ($75,000); and to develop improved disease-resistant oats ($50,000)		+$479,000
To strengthen research on controlling virus diseases of horticultural crops, especially deciduous fruits		+50,000
To intensify research on emergency crop insect problems, especially on Mexican fruitfly ($125,000); on pink bollworm and other cotton insects ($75,000); and on problems of insects becoming resistant to new insecticides ($50,000)		+250,000
To strengthen research in watershed hydrology		+100,000
To develop improved equipment and low-cost structures for making, storing, and feeding silage		+50,000
To strengthen research to aid farmers on farm business and adjustment problems		+100,000
To strengthen livestock breeding research to increase efficiency of production and to adjust product quality to market demand		+247,000
To strengthen dairy cattle breeding and feeding research to improve efficiency and lower cost of milk production		+150,000
To intensify research on animal diseases and parasites to reduce livestock and feed losses		+261,000
To initiate an animal husbandry research program in the Virgin Islands		+25,000
To expand research on cotton utilization		+150,000
Increase for research		+1,862,000
ant and animal disease and pest control:		
Increase to carry out additional responsibilities under Public Law 518, approved July 22, 1954, amending the Insecticide, Fungicide and Rodenticide Act		+75,000
Decrease in Federal participation in plant-disease and pest-control programs as follows:		
Sweetpotato weevil control	−50,000	
Phoney peach and peach mosaic eradication	−38,000	
Golden nematode control	−100,000	
White-fringed beetle control	−50,000	
Grasshopper and Mormon cricket control	−226,400	
		−464,400
Decrease in diagnosis, control and eradication of miscellaneous animal diseases		−33,079
Decrease due to transfer of responsibility for administration of the Process Butter Act to the meat-inspection subappropriation		−13,100
Net decrease in plant and animal disease and pest control		−435,579
Net increase, salaries and expenses		+1,426,421

Project statement

Project	1954	1955 (estimated)	Increases or decreases	1956 (estimated)
1. Research:				
(a) Crop research:				
(1) Field crops	$4,586,916	$5,035,900	+$479,000	$5,514,9
(2) Horticultural crops	3,203,321	3,496,300	+50,000	3,546,3
(3) Entomology	3,785,884	3,913,800	+250,000	4,163,8
Total, crop research	11,576,121	12,446,000	+779,000	13,225,0
(b) Farm and land management research:				
(1) Soil and water conservation	3,397,097	3,645,200	+100,000	3,745,2
(2) Agricultural engineering	1,316,859	1,509,700	+50,000	1,559,7
(3) Production economics	1,247,712	1,369,100	+100,000	1,469,1
Total, farm and land management research	5,961,668	6,524,000	+250,000	6,774,0
(c) Livestock research:				
(1) Animal and poultry husbandry	2,228,517	2,306,900	+247,000	2,553,9
(2) Dairy husbandry	1,270,635	1,281,500	+150,000	1,431,5
(3) Animal disease and parasite	1,905,265	2,103,600	+261,000	2,364,6
Total, livestock research	5,404,417	5,692,000	+658,000	6,350,0
(d) Administration of payments to States, and Territorial research:				
(1) State experiment stations	190,257	177,000		177,0
(2) Territorial experiment stations	539,656	555,000	+25,000	580,0
Total, administration of payments to States, and Territorial research	729,913	732,000	+25,000	757,0
(e) Human nutrition and home economics research:				
(1) Human nutrition	1,010,647	1,084,000		1,084,0
(2) Home economics	341,880	342,000		342,0
Total, human nutrition and home economics research	1,352,527	1,426,000		1,426,0
(f) Utilization research:				
(1) Cereal and forage crops	1,148,702	1,406,900		1,406,9
(2) Cotton and other fibers	1,271,089	1,518,400	+150,000	1,668,4
(3) Fruits and vegetables	1,884,415	1,935,800		1,935,8
(4) Oilseeds	990,780	1,144,100		1,144,1
(5) Sugar and special plants	890,365	864,900		864,9
(6) Poultry, dairy, and animal products	1,532,223	1,891,400		1,891,4
(7) Agricultural residues	238,209	240,500		240,5
Total, utilization research	7,955,783	9,002,000	+150,000	9,152,0
Subtotal	32,980,429	35,822,000	+1,862,000	37,684,0
2. Plant and animal disease and pest control:				
(a) Plant disease and pest control:				
(1) Plant pest control	6,289,423	6,280,700	−389,400	5,891,3
(2) Plant quarantine	2,671,532	2,691,300		2,691,3
Total, plant disease and pest control	8,960,955	8,972,000	−389,400	8,582,6
(b) Animal disease and pest control:				
(1) Animal disease control and eradication	7,175,526	7,461,679	−46,179	7,415,5
(2) Animal quarantine	1,234,403	1,255,900		1,255,9
Total, animal disease and pest control	8,409,929	8,717,579	−46,179	8,671,4
Subtotal	17,370,884	17,689,579	−435,579	17,254,0

Project statement—Continued

Project	1954	1955 (estimated)	Increases or decreases	1956 (estimated)
3. Meat inspection	$14,160,173	$14,325,000		$14,325,000
Total available or estimate	64,511,486	67,836,579	+$1,426,421	69,263,000
Transfer in 1955 estimates from:				
"Agricultural Marketing Act, Agriculture"	−303,748			
"Salaries and expenses, Office of Administrator, Agricultural Research Administration"	−350,819			
"Salaries and expenses, Office of Experiment Stations, Agricultural Research Administration"	−355,410			
"Virgin Islands agricultural program, Office of Experiment Stations, Agricultural Research Administration"	−95,855			
"Research on agricultural problems of Alaska, Office of Experiment Stations, Agricultural Research Administration"	−269,966			
"Salaries and expenses, Bureau of Human Nutrition and Home Economics, Agricultural Research Administration"	−1,391,529			
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration"	−26,528,339			
"Salaries and expenses, Bureau of Dairy Industry, Agricultural Research Administration"	−1,636,897			
"Salaries and expenses, Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration"	−7,491,825			
"Salaries and expenses, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration"	−11,263,757			
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration"	−11,685,863			
"Salaries and expenses, Bureau of Agricultural Economics"	−1,191,339			
"Salaries and expenses, Forest Service"	−178,459			
"Forest roads and trails, Forest Service"	−2,000			
"Conservation operations, Soil Conservation Service"	−618,393			
"Salaries and expenses, Marketing services, Production and Marketing Administration"	−623,682			
"Resources management, Bureau of Indian Affairs"	−62,070			
Transfer in 1956 estimates from:				
"Research and development, Army"	−369,965	−377,500		
"Operating expenses, Atomic Energy Commission"	−95,000	−95,000		
Transfer in 1956 estimates to:				
"Salaries and expenses, Office of Information, Agriculture"	+3,430	+3,500		
Total appropriation or estimate		67,367,579		

Statement of obligations under allotments and other funds

[Includes only these amounts which, by Nov. 30, 1954, were actually received or programed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases]

Item	Obligations, 1954	Estimated obligations, 1955	Estimated obligations, 1956
Allotments from Flood Prevention, Soil Conservation Service:			
For economic analyses of flood control and comprehensive river basin surveys	$61,552	$30,705	----------
Allocations and working funds (advances from other agencies):			
Department of Agriculture:			
Soil Conservation Service:			
For economic analyses in connection with the watershed-protection program	[1] 20,000	[1] 50,000	$100,000
Agricultural Marketing Service:			
To develop methods for estimating carcass composition of live meat animals	14,736	14,550	14,550
To determine the nutritional effect of drying unripe grains by different procedures	3,899	4,000	4,000
To develop methods and equipment for determining the quality of shell eggs	3,865	4,000	4,000
For identification and certification of superior meat-type hogs	13,910	22,500	22,500
For studies on preslaughter treatment of meat animals	----------	8,730	8,730
For study of the yield of dairy products from a unit quantity of milk	6,718	8,730	8,730
To make practical tests for determining the baking quality of milk solids	----------	19,400	19,400
For improvement of United States grades of hay to increase nutrition value	10,760	10,670	10,670
To determine nutritional requirements of school-feeding programs	19,983	30,000	30,000
Total, Agricultural Marketing Service	73,871	122,580	122,580
Commodity Credit Corporation:			
For research on farm storage of grains and related commodities	----------	44,000	----------
Total, Department of Agriculture	93,871	216,580	222,580
Atomic Energy Commission:			
For accumulation and movement of fission products in soils and plants	83,906	65,000	65,000
Foreign Operations Administration:			
For expenses in connection with training, consultation, and technical assistance activities	603,891	808,448	----------
Department of the Army:			
Services for special projects	1,425,597	568,407	----------
For research related to the formation of rubber in Hevea trees	14,600	18,000	----------
For studies and research of current literature and reports dealing with plant diseases in other parts of the world	5,764	----------	----------
For studies on sweetpotatoes covering dehydration, handling, and related research	5,023	----------	----------
For research on the differentiation of micro-organisms by infra-red spectra	19,949	33,551	----------
For studies on synthesis of plant growth regulating derivations of amino acids and sugars, and carbonates evaluation	3,744	10,000	----------
For research on treatment of cotton as a substitute for silk in the manufacture of cartridge cloth	2,650	----------	----------
For research on the flameproofing of cotton textiles and the retardation of flaming and afterglow of cotton	28,725	25,744	----------
For research on emulsifiable oils and fats for use in intravenous alimentation	33,372	47,002	----------
For research in connection with the preparation of mammalian cholinesterase	7,253	----------	----------
To determine effect of various drying operations on the proteins and enzymes of bacteria	----------	35,165	----------
For study of the dehydration of fruits and vegetables	5,870	----------	----------
For studies relating to antigenic properties of certain fungus spores	5,023	7,977	----------
For investigations and the development of control measures on insects and other arthropods of importance to the Department of Defense	----------	33,808	----------
For expenses incident to bringing dehydration handbook up to date	----------	10,000	----------

[1] $20,000 received in 1954 and 1955 by allotment. These amounts shown under allocations and working fund for comparability purposes.

Statement of obligations under allotments and other funds—Continued

Item	Obligations, 1954	Estimated obligations, 1955	Estimated obligations, 1956
Allocations and workink funds—Continued			
Commodity Credit Corporation—Continued			
Department of the Army—Continued			
For research to determine the feasibility of procedures for dehydration of sweetpotatoes on a large scale comparable to production conditions	----------	$9,000	----------
For meat inspection and grading services	----------	350,000	----------
Total, Department of the Army	$1,557,570	1,148,654	----------
Department of the Air Force:			
For experimental investigations, studies, and tests in connection with the development of special scientific equipment	25,503	29,790	----------
Department of the Navy:			
For investigations and the development of control measures on insects and other arthropods of importance to the National Military Establishment	19,873	----------	----------
Department of the Interior:			
For chemical and physical analysis of soils and their relation to irrigation agriculture	4,036	2,338	----------
For research on sheep breeding	17,538	19,597	----------
Total, Department of the Interior	21,574	21,935	----------
General Services Administration:			
For research and survey activities relating to continuing and expanding abaca production in the Western Hemisphere	65,500	60,000	$60,000
For production of seed	425	485	----------
Total, General Services Administration	65,925	60,485	60,000
Department of State:			
For quarantine services in connection with preventing the introduction of the oriental fruitfly into Australia and New Zealand and purchase of guayule seed for the Empresa Nacional Calvo Solelo, Madrid, Spain	6,387	13,397	5,250
Total, allocations and working funds	2,478,500	2,364,289	352,830
Trust funds, miscellaneous contributed funds, Department of Agriculture: Funds received from States, local organizations, individuals and others in connection with work under cooperative agreements	140,713	149,385	139,600
Inspection of animal foods, Agricultural Research Service: For inspection and certification of animals foods	72,112	70,272	70,248
Expenses, feeds, and attendants for animals in quarantine, Department of Agriculture: Expenses for feed and attendants for animals in quarantine	16,640	19,000	19,000
Technical assistance, United States dollars advanced from Foreign governments: For analysis of soil and water samples for other countries	1,385	----------	----------
Total, trust funds	230,850	238,657	228,848
Transfer from Commodity Credit Corporation: For accelerated brucellosis eradication program in accordance with the act of Aug. 28, 1954 (Public Law 690)	----------	12,700,000	15,000,000
Obligations under reimbursements from governmental and other sources:			
Salaries and expenses:			
For meat-inspection service furnished packers and other Government agencies	2,824,580	4,160,200	4,597,600
Other	891,254	1,118,956	1,210,920
Total, salaries and expenses	3,715,834	5,279,156	5,808,520
All other	4,900	----	----
Total	3,720,734	5,279,156	5,808,520
Total obligations under allotments and other funds	6,491,636	20,612,807	21,390,198

RESEARCH

CROPS RESEARCH PROGRAM

Mr. MARSHALL. Dr. Moseman, will you proceed with your general statement?

Dr. MOSEMAN. Mr. Chairman, I will cover the crops research program. That includes the work of three Branches: The Field Crops Research, the Horticultural Crops Research and the Entomology Research. I should like, for each of these Branches, to review some items of progress and then to discuss as you have indicated, in some detail, the items of increase.

MALE STERILITY FOR CORN HYBRIDS

In the field crops research work, we have made some new advances in corn hybridization, in the use of male sterility for the commercial production of hybrid corn. This will eliminate the need for hand-detasseling of the plants that are used for female parents in the hybrids. We have conducted work on the factor of male sterility for inbred lines and we are now in the process of transferring male fertility, that is, the ability to produce pollen, to certain lines. We have used some of the new funds that were provided a year ago to employ a geneticist at the Illinois Agricultural Experiment Station to strengthen and speed up this work.

CONCHO WHEAT RESISTS MOSAIC DISEASE

In our wheat-improvement program, we have released a new variety that is resistant to the mosaic diseases in Oklahoma and Kansas. You may recall that about 3 years ago we had a tremendous outbreak and loss due to mosaic disease. There are two destructive mosaic diseases: One is a soilborne disease; the other is a disease that is transmitted by the wheat mites. We have developed a variety, in cooperation with the Oklahoma Agricultural Experiment Station, which has been named Concho. It has been released for growing in the Oklahoma-Kansas area. In addition to being resistant to mosaic it has extremely strong gluten properties, important at the present time because the Kansas-Oklahoma wheatgrowers are very much concerned about improving the quality of their wheat.

RUST-RESISTANT DURUM WHEAT

Also, in our wheat program, we have developed several varieties of durum wheats that are resistant to rust. Previous to 1950, we had very little loss from rust in the durums, but that year the durums were badly attacked by race 15B of stem rust and in 1953 and 1954 we lost 65 to 80 percent of a normal 40-million-bushel crop. When that race of rust became established throughout the wheatgrowing area we searched through our world collection of 13,000 different wheat types for sources of resistance. As a result we have developed four lines or varieties that have resistance to race 15B and appear to be satisfactory from the standpoint of quality and agronomic characteristics. About 65 to 80 bushels of each one of these varieties were sent to Arizona this past fall to grow a crop during the winter months. With that seed

we expect to produce about 12,000 bushels that will be shipped to North Dakota for further seed increase this next spring. If we have a favorable season in 1955, we expect about 150,000 to 200,000 bushels of seed and by 1957 we should have enough seed of these varieties to plant the entire durum area.

Mr. HORAN. Mr. Chairman, may I comment there? This is right in line with what we discussed yesterday. One way it seems to me practical to approach the surplus problem is to put more emphasis on quality and therefore more research which affects our quality-bearing strains, because if we put the emphasis we have on quantity, we have these surplus problems and it is this type of research which is therefore particularly valuable.

Dr. MOSEMAN. In that connection, Mr. Horan, I might mention for the benefit of the new members of the committee that of the increased funds the Congress provided for our research last year, we used $50,000 to strengthen our wheat quality research. That is going to help in improving the marketability of our wheat crop.

Mr. HORAN. There will have to be further research into the climatic effect upon various types of durums. There are areas, I understand, where it is almost impossible at the present time to grow a good grade of durum wheat.

IMPROVED GRAIN SORGHUMS

Dr. MOSEMAN. In our grain sorghum research, we have a real opportunity to improve the feeding value of our grain sorghums. Before 1951, the grain sorghums in this country did not have a yellow endosperm or any appreciable amount of carotene, the precursor of vitamin A. A deficiency of vitamin A causes night blindness and certain other undesirable traits in livestock. In 1951, one of our Department agronomists was in Nigeria to assist that government under the FOA program. He found a sorghum variety that had a yellow endosperm. He made some crosses while still in Nigeria, sent that hybrid seed back to the experiment station at Lincoln, Nebr., where he was headquartered and we have progenies from these crosses that are now being intercrossed with other domestic varieties in order to improve the feeding quality of our grain sorghums.

SMOOTH LEAF COTTONS REDUCE TRASH IN THE LINT

Attention has been given for several years to improving the quality of our cotton for mechanical harvesting. We have known for a number of years that smooth leaves will help in the cleaning of leaf fragments and gin trash from the lint. In 1945, we had an experimental variety that was known as Delta Smooth Leaf that was used in some crosses. That source has not proved to be successful because it has not given us the kind of fiber properties and the yielding capacity in the hybrids that we need. In the last year or two, we have found a new smooth-leaf character that has been transferred from a wild American type of cotton. In this case, not only the leaves but also the stems of the plant are smooth. The inheritance is very simple. It is carried by a single dominant gene so it is going to be easy to transfer in a breeding program. We have released this genetic material to cotton breeders.

NEW AMERICAN-EGYPTIAN COTTON

Also, in our cotton-improvement work we have developed a new American-Egyptian type of cotton; that is, a long-staple cotton about 1 7/16-inch staple, that has been called Pima S–1. This variety has yielded an average of about 15 percent above Pima 32, the variety that it is replacing out in the West. Our mill tests show that Pima S–1 is equal in performance to Pima 32 or the Egyptian Karnak variety that we have been importing. The growers in the West feel that they now have an opportunity to establish a good, strong, stable industry in the irrigated areas of Arizona and New Mexico. This development is important not only from the standpoint of our American agriculture and our national-defense requirements, but also from the standpoint of breeding methodology. This new variety has been developed from a complex series of hybrids, using 3 distinct types of *Gossypium barbadense* and 1 of our upland types in the cross. We feel that except for the spinning properties, which are essentially the same as the Egyptian Karnak, we have really a new type of cotton that is not similar to anything we have had previously.

NEW CHEMICAL FOR COTTON DEFOLIATION

We are continuing to explore for new chemicals for cotton defoliation. One, amino triazole, a herbicide, shows promise of being very effective in the Arizona, California, Mississippi, and Texas areas. This chemical can be used to defoliate cotton. It will retard or reduce the amount of regrowth which has always been a problem. It can be used also with other defoliants to increase the leaf fall efficiency under conditions where in the past we have had difficulty in getting effective chemicals. It is not dangerous or toxic to warm-blooded animals and so far we have not found any effect on the viability of the cottonseed which has been a problem with certain other materials.

IMPROVED PASTURES SUPPLEMENT PINEY WOODS RANGE

In our forage crop and pasture studies, during the past two summers, at Alapaha, Ga., in cooperation with the Forest Service and the Animal and Poultry Husbandry Branch, we found that improvement of pastures was effective in increasing beef production in the piney woods area. Calves on improved pastures gained about 47 pounds or 85 pounds more than the calves of the same age on the native piney woods range. Their mothers gained 26 pounds on the improved lands whereas they lost about 162 pounds on the native ranges.

The improved pasture in these studies consisted of either Dallis grass and white clover mixtures, or coastal Bermuda mixed with white clover. The use of improved pastures to supplement the native range is a more practical method than attempting to convert the native rangeland, that is already stocked with timber, into improved grazing lands by overseeding.

Mr. HORAN. How is that conducted? I think that might be enlightening to us. Is that done in conjunction with individuals or the Forest Service as well as with the Research Administration?

Dr. MOSEMAN. This is a case where we are providing the technical competence on the plant management side. The Forest Service has responsibility for the management of some of these piney woods rangelands and they furnish the experimental areas, also some of the equipment that we need for clearing lands and reseeding. The Animal and Poultry Husbandry Research Branch is assisting in measuring the effect on the animals, that is, gains and losses in the productivity of the livestock. This is rather typical of the way we try to fit together the competence of various branches of the Research Service, the Forest Service and in some cases the State experiment station cooperators.

INCREASING SEED OF NEW VARIETIES

Mr. HORAN. In the propagation of a new strain or variety, in order to get seed for expansion of this new type of forage, how do you go about that? Do you do that or do you let some enlightened farmer have a contract to raise the seed?

Dr. MOSEMAN. The improved varieties are released usually through an agricultural experiment station that is cooperating in our research program. The varieties are evaluated on the basis of tests conducted throughout the State and in many cases throughout a wider area than a State. When the variety is recommended for increase and release, in recent years if it is a forage-crop variety, we have included it in our foundation seed stocks increase program. The early generation seed is supplied to growers, usually in the West. California has increased the production of alfalfa seed, for example, tremendously in the last 5 years. Forage-seed production also has increased in the Pacific Northwest, in Washington, and in Oregon. We find that we can usually get double or triple the seed yields per acre in those areas over what we could produce in the regions where the crop is adapted for forage growing. The Department of Agriculture participates in this program by providing the financial backstopping, through the Commodity Credit Corporation. The seed that is produced in the West is shipped back to the East for use by farmers. We have made remarkable progress in getting our improved grass and legume varieties increased by taking advantage of the seed-production capacity in the West. We are essentially the middleman as far as the Department of Agriculture is concerned. We help to bridge the gap between the western seed grower and the forage crop user in the East.

PILGRIM, A NEW VARIETY OF WHITE CLOVER

In our forage-crop improvement program we have released a new variety of Ladino clover that has been named Pilgrim. This was first released in 1953 and is in production at the present time. It is a combination of 21 different clones that were collected and tested in the Northeastern States. Nineteen of these lines were selected by the United States Regional Pasture Research Laboratory in Pennsylvania. Another was developed by the New Jersey Experiment Station and one was developed and selected at the Canadian Experiment Station at Ottawa. We have developed, through this cooperation, a composite variety that is being released to the Northeastern States. This variety has persisted longer than most lots of certified Ladino clover. The breeder seed is being produced by the Washington Agricultural Experiment Station.

MONOGERM HYBRID SUGAR BEETS

We are continuing to make progress on the development of monogerm hybrid sugar beets. The mechanical harvesting of sugar beets now depends pretty largely on precision planting. I might explain that the monogerm character is really a single-seed germ character. Beetseed, as you know, has a locule that includes several seeds in each seed piece. We have found monogerm types, single-germ seeds, and we are incorporating this monogerm character into our commercial beet lines.

We first found this monogerm character in 1948 and have already developed some commercial varieties of beets that are in production.

ANTIBOTICS CONTROL TOBACCO DISEASES

Our work in antibiotics was discussed before this committee a year ago and you may recall that there was an increase of funds provided for research on antibiotics. Experiments in the greenhouse at Beltsville and under plant-bed conditions in North Carolina with the blue-mold disease of tobacco showed that streptomycin sulfate applied as a spray controlled the blue-mold disease of tobacco very effectively. Blue mold, as you know, is a fungus disease and particularly troublesome in tobacco-plant beds. Tests on wildfire, which is a bacterial disease, showed that streptomycin sulfate was also highly effective at the same rates used for blue-mold control. It gave consistently better control than the standard copper-spray treatments.

In both the blue-mold and the wildfire experiments there were strong indications that streptomycin sulfate was curative as well as preventative. In other words, it not only protected against the infection but also retarded the development of the disease and promoted the recovery of the plant after general plant infection had occurred.

We have developed two varieties of burley tobacco that are resistant to black-shank disease. Burley 11A and Burley 11B are the new varieties developed in cooperation with the Tennessee Agricultural Experiment Station.

RESEARCH TO CONTROL FIRE BLIGHT

Mr. HORAN. You had some hope of curing fire blight in deciduous fruit trees?

Dr. MOSEMAN. Yes, we have some results on that. We conducted some preliminary work in 1953 that I believe we mentioned a year ago. We followed that up in a very extensive experiment in California this past year and we have found a mixture of antibiotics, streptomycin plus teramycin, which is highly effective in controlling fire blight. The fruit was free from the rusting or blemish that follows the use of copper sprays and dusts. We feel that we do have a promising control although at the present time the cost is out of reason when based on the cost of the small experimental samples of the material that we are using. The cost should be reduced substantially if the materials get into volume production.

BURLEY 21 IMMUNE TO WILDFIRE DISEASE

In addition to the Burley 11A and 11B varieties, we have another new Burley tobacco variety, one that is practically immune to wildfire disease. Burley 11A and 11B are resistant to blackshank disease while Burley 21 combines resistance to wildfire, tobacco mosaic, and blackroot rot. It is the first Burley tobacco that has substantial resistance to wildfire and it will be available to growers for planting in 1955. The wildfire resistance was transferred by breeding from a wild type of tobacco.

Burley 21 is a good variety from the standpoint of holding its leaves erect, it has yielded well during the several years tested, and has brought dollar returns about equal to that of other commercial varieties even where the disease conditions were not present. Its leaves are relatively thin and bright so a high percentage of this tobacco can go into cigarette manufacture.

SPECIAL CROP RESEARCH

In our drug, oil, and special product plant work, we have a number of lines that I might mention. We are attempting to develop indehiscent or nonshattering types of sesame that have resistance to bacterial and other leaf diseases.

Mr. NATCHER. Have you conducted in your department any study whatsoever in regard to chemicals left on the leaf at the time of cutting and curing and so forth? Has any study been made?

Dr. MOSEMAN. Possible residues of chemicals?

Mr. NATCHER. Yes.

CHEMICAL RESIDUES ON CROPS

Dr. MOSEMAN. We are watching that all the time. Of course, we are particularly concerned about it at the present time, with all of the interest in the possible health hazards of tobacco. Every chemical that we use, whether for disease, weed, or insect control, or to control suckering, is screened very carefully chemically and checked with the Food and Drug Administration or Public Health Service when this seems desirable. These agencies have cooperated very well and we feel that we have been safe and sound in recommendations we have made so far.

SESAME CROP RESEARCH

The sesame crop is of particular interest in Texas and South Carolina. We have five high-yielding strains that are being increased this winter in Venezuela and Mexico in order to speed up the increase of seed to grow back in Texas and South Carolina during the next crop season.

Mr. MARSHALL. What is that?

Dr. MOSEMAN. Sesame is an oil seed. It is used both as a special oil of high quality and on bakery products. Sesame seed is used on many types of rolls and buns. It is a specialty crop. We are interested in it because we feel it has some use as a substitute crop in areas where cotton is going out of production.

Mr. MARSHALL. Is the oil an edible oil?

Dr. MOSEMAN. Yes; it is a high-grade edible oil.

We are also continuing studies of safflower, working with the Arizona and Texas Experiment Stations. We have observed about 270 different varieties, which have been screened for oil content, disease resistance, earliness, drought tolerance, and other factors. We are trying to select varieties that will produce high yields of seed and oil.

NEW CHEMICAL, AMIZOL, CONTROLS NUT GRASS

In our weed-control research we have found a new chemical that controls nut grass which has been a very serious problem in many of the Southern States and also in California cotton fields. Experiments in Georgia have indicated that a new chemical called amizol is absorbed and translocated through the underground rhizome system or the tuber chains of the nut grass. The selective killing action of the chemical appears to be the result of its property of inhibiting the development of chlorophyll. The new compound looks promising for the control of Johnson grass, quack grass and a number of other weeds in addition to nut grass. This herbicide is highly selective as a preemergence treatment and shows promise as a fortifying agent in some of our general weed-killing sprays.

Mr. NATCHER. Mr. Chairman. Dr. Moseman, in regard to Johnson grass, have you figured that down on an acreage basis as to how much it would cost, $40 or $50?

Dr. MOSEMAN. I do not have cost estimates on this particular product. It is a relatively new one. My guess is that it should be a relatively cheap control because a small amount of it should go a long ways. It travels through the rhizomes and through the plant in that way. We can get some cost estimates on it but I do not have them at the moment.[1]

Mr. MARSHALL. Thank you for an excellent statement, Dr. Moseman.

We will now proceed to the item of "Field crops research," showing for the forage crops an increase of $354,000.

FORAGE CROP RESEARCH

Dr. MOSEMAN. This item, Mr. Chairman, is made up of two rather distinct parts. The first is the forage crop breeding, disease, and management work which covers $272,000 of the increase. The second part is the control of weeds and brush on pastures and range lands, with an increase of $82,000.

I would like to discuss first the increase for the forage improvement work. A more adequate program of research on forage crop production would be of great assistance to farmers in meeting some of their current major problems. There is a need for getting at least 25 to 30 million acres of croplands out of surplus crops. Much of this land is suited for forage production. Larger acreages of improved hay, pasture, and range would help in the acreage adjustment to soil-conserving and soil-building crops.

Improving efficiency of forage production provides a real potential for cutting feed costs, with a greater margin of profit for stockmen,

[1] The Department of Agriculture advises that no cost estimates are available on this matter.

and a more adequate national diet with lower cost meat and other livestock products.

There are several factors that are limiting efficiency of forage production. These include the lack of suitable, disease resistant varieties for many important producing areas. The cost of establishing stands is from $35 to $50 an acre in many areas and then farmers have difficulty in maintaining those stands with our present varieties, many of which are susceptible to leaf and crown or root diseases. A third major problem is the competition from brush and weeds.

Mr. MARSHALL. Before you get into that. You have been talking about forage crops. Just what do you have specifically in mind? That is a nice general statement but specifically what are you thinking about? What crops?

FORAGE CROP DISEASES

Dr. MOSEMAN. I would like to review for you some of the specific problems that we have. We might start with alfalfa. Bacterial wilt of alfalfa is an example of one serious disease which we have rather effectively controlled through breeding. We have other serious diseases that continue to reduce both the yield and the quality of the alfalfa crop. These are the blackstem, leafspot, anthracnose, and other diseases that cost an estimated 25 to 40 percent loss annually, nearly a quarter of a billion dollars for the alfalfa crop alone.

In red clover, grown on 18 million acres in the Corn Belt and in the East, we have leaf and stem diseases, and root and crown rots which cause an annual loss estimated at over $300 million. The development and use of the new variety Kenland has demonstrated the possibility of restoring the crop to many farms where it once performed well but lost out due to diseases. We need productive disease-resistant varieties for the central and northern red clover growing areas where Kenland is not adapted.

White clover and birdsfoot trefoil are the leading perennial pasture legumes throughout the humid areas. Research attention has been directed to ways of more successfully establishing birdsfoot trefoil on hay and pasture lands but the problem is not yet solved. Trefoil is important because it tolerates wet and acid soils; it grows well with grasses and very seldom causes bloat in livestock. Once established, however, birdsfoot trefoil is so susceptible to Rhizoctonia that stands are destroyed before giving their maximum productivity. Use of Ladino, a superior white clover, has dropped significantly in recent years due to virus diseases, crown rots, and lack of persistence under grazing.

The sweet lupine, which is a productive winter-grazing legume for the Deep South, lacks the winter hardiness necessary to survive and produce throughout the Southern States. It is also threatened by destructive virus diseases.

GRASS FOR COTTON BELT

We need improved adapted annual and perennial cool season grasses for permanent and rotation pastures in the Cotton Belt. We have research underway to develop rust resistant rye grasses and to

improve the tall fescue which lacks palatability. We are continuing to test new introductions as well as to strengthen our breeding work on cool season species, to provide varieties of high feeding value for pasture on rotation cropland in the South.

PASTURE AND RANGE MANAGEMENT

A word about management. The management of grass and legume mixtures under grazing may influence production and life of stand by over 100 percent. Better management practices and less expensive methods of evaluating grazing crops need to be developed.

In the West, we have drought and overgrazing of millions of acres of rangeland. This has brought about invasion of sagebrush and other undesirable plant growth which has reduced the productivity or destroyed completely vast areas of grazing lands. Research is needed to guide the revegetation of these rangelands.

REVEGETATION OF RANGELANDS

I attended the field day at the Jornado Experimental Range at Las Cruces, N. Mex. last October. They are suffering the worst killing of the forage species on the ranges out there on record. They have not had success in reestablishing that rangeland through reseeding. The question is: how can they manage their grazing practices in such a way as to bring back the desirable species in the shortest possible period of time?

Mr. MARSHALL. Is that due to drought or to some disease?

Dr. MOSEMAN. Drought, the cumulative effect of about 6 years of very bad drought in that area.

DROUGHT RESISTANT GRASSES

Mr. MARSHALL. Have you been doing some work on drought resistance?

Dr. MOSEMAN. Yes, we have, Mr. Marshall. In the last 2 or 3 years, we have cooperated with the Kansas, Oklahoma, Texas and New Mexico Agricultural experiment stations in scouring that southwestern area for grass plants that have been able to survive under serious drought condition. We have collected about 2,500 different specimens of grasses and have those available now for use in the breeding program we hope to initiate under this increase. It will take a large amount of time, labor and effort to properly evaluate and increase these materials.

ALFALFA AND CLOVER RESEARCH

Mr. MARSHALL. What specific new plans do you have for alfalfa and clover?

Dr. MOSEMAN. For those, it would be largely strengthening the breeding and disease research.

Mr. MARSHALL. You don't anticipate any new projects along the line of any of this work? It is strengthening of old projects, is that correct?

Dr. MOSEMAN. It is primarily strengthening of current projects. We would strongly emphasize some promising new leads. For example, we have found a number of alfalfa types that are spreading; that is, they spread from underground roots or from aboveground stems. We feel if we can develop varieties that will spread rapidly and effectively we can get grazing types of alfalfa which can be used under dry land conditions and also in pastures and areas where we do not now have suitable adapted legumes. You may be familiar with the variety, Ladak, which has some tendency to spread but Ladak does not spread unless you graze the pasture down hard and more or less beat it into the ground. Then it does creep some. We have other types that will spread under less severe treatment.

IRRIGATED PASTURES

Another line of work we plan to emphasize is on irrigated pastures, finding varieties of grasses and legumes that are more efficient from the standpoint of water use. We also must develop systems of forage management that will make the maximum combined use of the irrigated crops and the adjacent pasture lands.

Mr. MARSHALL. Is that strengthening the old or does that mean new projects?

Mr. MOSEMAN. This would be essentially new work. We have some limited work on irrigated pastures at the present time but that would be essentially a new project.

PROBLEMS OF SEED PRODUCTION

The development of improved grass and legume varieties must be accompanied by seed production methods that not only assure adequate supplies but insure the purity and the continued performance of the improved strains.

I mentioned earlier the practices we follow in seed production, that is, growing seed crops in the West for forage production in the East. There has been considerable question raised in the last few years regarding the tendency of varieties to change with regard to adaptation, when grown for seed out in the West. We are not worried about the first or second crops of seed that we harvest off the planting. But, we are not too sure about the fourth and fifth crops. How much has the environment in the West changed the basic nature of that seed? It is possible that natural selection, including diseases, could eliminate some plant types in a variety that includes several strains or types. We need to expand our research to answer that question.

We must develop improved methods for the processing and handling of the chaffy-seeded range grasses to provide seed supplies for areas of the Great Plains and arid regions of the West. This includes big, little, and sand bluestem, side oats grama, and other species. We would plan to use, of the total increase, about $40,000 on alfalfa work. I can give you, Mr. Chairman, what we plan to do by location, if you care to go into that detail.

Mr. MARSHALL. Submit that for the record, please.

(The information referred to follows:)

Alfalfa ($40,000)

Pullman, Wash.: A GS–9 geneticist would be employed to conduct basic studies on species interrelationships as they affect breeding behavior and related research.

St. Paul, Minn.: A GS–9 pathologist would be employed to develop techniques for testing and eliminating alfalfa plants susceptible to the more important leaf and stem diseases.

Raleigh, N. C.: A GS–9 agronomist would be employed to devote full time to alfalfa breeding (at present one man is devoting half time to lespedeza and other southern legumes) for the Southeast.

Brookings, S. Dak.: A GS–9 physiologist and subprofessional assistant would be employed to conduct physiologic studies involved in breeding and developing dryland grazing alfalfas.

Clovers ($42,500)

Auburn, Ala. (or other southeastern location): A GS–11 pathologist would be employed to investigate diseases affecting persistence of perennial clovers and assist plant breeders in devising methods of control, including the breeding of resistant varieties.

Urbana, Ill.: A GS–9 physiologist would conduct basic research on the effects of various environmental factors and diseases on ladino clover, production, longevity, winter hardiness, and drought resistance.

Lexington, Ky.: Increase from half to full time the present physiologist conducting basic studies on clover physiology including relationships of various diseases upon perennial growth habit.

Durham, N. H.: A GS–9 pathologist would be employed to work with white-clover breeder in developing disease-resistant whiteclovers adapted for the Northeast.

Madison, Wis.: Increase from half to full time the pathologist conducting research on inoculation and screening techniques necessary to implement breeding red and sweet clovers for disease resistance.

Lespedeza, trefoil, and lupine ($35,000)

Gainesville, Fla.: A GS–9 agronomist and GS–9 pathologist would be employed to investigate diseases infecting lupines and to develop resistant varieties.

Raleigh, N. C.: Increase from half time to full time on lotus and lespedeza breeding the present GS–11 agronomist devoting half time to alfalfa breeding.

State College, Pa.: Employ GS–9 agronomist to devote full time to lotus breeding for resistance to root and stem diseases, seedling vigor, and compatability with pasture grasses.

Grass breeding ($90,000)

Tucson, Ariz.: Employ GS–11 geneticist, GS–7 agronomist, and a subprofessional to develop by introduction, breeding, and interspecific hybridization superior grasses adapted to arid desert, irrigated, and high altitude conditions, with a high degree of salt tolerance where needed.

Beltsville, Md.: A GS–9 geneticist and assistant would be employed to conduct fundamental genetic investigations as a basis for developing improved grass breeding techniques.

Mandan, N. Dak.: A GS–9 agronomist and an assistant would be employed to expand the present limited grass breeding work in the Northern Great Plains with crested wheatgrass, Russian wildrye, stipa sp., etc.

Stillwater, Okla.: A GS–9 agronomist and an assistant would be employed to develop harvesting and processing techniques with chaffy-seeded native grasses with emphasis on quality, longevity and performance when planted under range conditions.

College Station, Tex.: One GS–9 geneticist and an assistant would investigate the cytogenetics of introduced grasses in relation to abnormalities encountered in seed production of interspecific hybrids.

Pasture management—humid area ($12,000)

Beltsville, Md. A GS–9 agronomist would be employed to study factors responsible for competition and compatability of various grasses and legumes in pasture mixtures and to develop management practices that favor persistence and constancy of composition. A GS–7 assistant would be employed to expand the analytical phases of these studies.

Pasture laboratory ($10,000)

State College, Pa.: Three subprofessional assistants would be employed for (1) the chemist, (2) the pathologist, and (3) the plant breeder to expand and increase

the efficiency of their present efforts in determining and developing basic principles of pasture management involving the complex interrelationships of plant type, stage of growth, plant diseases, climate, and soil on plant composition and animal response.

Pasture and range management—arid region ($27,500)

Delta, Colo.: A GS–9 and a GS–5 range conservationist would establish a new work location on the western slope of the Rocky Mountains to develop improved methods and determine the superior varieties for reseeding range and cutover forest lands in the region.

Ft. Collins, Colo.: A GS–9 agronomist would be employed to work with range conservationist at Central Plains experimental range to study effects of different grazing systems on forage production, soil cover, persistence, quality and competition with undesirable plants. Work would be conducted to evaluate various grass species and varieties for the high plains.

Bozeman, Mont.: A GS–5 assistant would be added to existing staff to expand irrigated pasture research, range reseeding and species evaluation for the northern intermountain area.

Foundation seed ($15,000)

Lafayette, Ind.: A GS–9 agronomist would develop methods and make tests for determining the genetic stability (performance value) in seed of improved grasses and legumes grown in different seed producing areas of the country.

Beltsville, Md.: A GS–4 assistant would be employed to help determine the variation in foundation seed lots due to location of production and year of seed harvest.

Dr. MOSEMAN. In addition to the $40,000 for alfalfa research; $42,500 would be used to support clover improvement, $35,000 for lespedeza, trefoil, and lupines; $90,000 for the grass breeding program; $12,000 for pasture management work in the humid area; $10,000 for the pasture laboratory research in the Northeast; and $27,500 for pasture and range management in the Western or arid regions. The remaining $15,000 would provide for work on foundation seed production problems.

I believe that covers the statement I have on the forage research item.

Mr. MARSHALL. Dr. Moseman, can you give us the new projects you propose here?

Dr. MOSEMAN. Consideration would be given first to strengthening existing lines of work. We would have some additional new projects. One would be a new line project on spreading types of alfalfa, another on irrigated pastures.

NEW LINE PROJECTS IN FORAGE CROPS RESEARCH

Mr. MARSHALL. Will you provide for the record the list of all the new projects you are putting into effect?

Dr. MOSEMAN. We can do that, surely.

(The list referred to follows:)

LINE PROJECTS RELATING TO FORAGE CROPS INCREASE

A. NEW LINE PROJECTS TO BE INITIATED

a-4-1-37 Creeping alfalfa, physiologic studies to develop dry land grazing alfalfas.

a-4-2-46 Basic physiologic studies to determine the interrelationships of diseases and winter hardiness on the performance of different genetic strains of clovers.

a-4-7-15 Evaluation of grasses and legumes for pasture, silage, and hay under irrigation.

a-4-7-16 Cultural and management practices of irrigated grasses and legumes for pasture, hay, and silage.

B. LINE PROJECTS TO BE STRENGTHENED

a–4–1–31 Breeding and evaluation of introductions and improved varieties and strains of alfalfa.
a–4–1–32 Cytogenetics, inheritance studies, and breeding behavior essential to the development of superior strains of alfalfa.
a–4–1–36 Diseases of alfalfa, causal organisms, and methods for their control.
a–4–2–35 Evaluation and breeding studies essential to the development of superior varieties of red clover for hay, pasture, seed, and soil improvement.
a–4–2–38 Evaluation and breeding studies to develop superior varieties of white clover for pasture, seed, and soil improvement.
a–4–2–42 Seed setting of red clover and Ladino white clover as affected by the structure and functioning of the flowers, agronomic practices, nutritional and environmental conditions.
a–4–2–43 Diseases of perennial clovers, including red and white, studies of causal organisms, and methods for their control.
a–4–4–41 Evaluation and breeding to develop superior strains of trefoil (*Lotus corniculatus* and *L. uliginosus*).
a–4–4–42 Evaluation and breeding to develop superior strains of winter legumes: winter peas, vetch, lupines, serradella, and annual medics for soil improvement and forage.
a–4–4–44 Evaluation and breeding of perennial legumes, Astragalus, Coronilla, Lathyrus, Lespedeza, Pueraria, Onobrychia, and Vicia for forage and soil improvement.
a–4–4–46 Diseases of annual winter legumes, studies of the organism causing them and methods for their control.
a–4–5–56 Breeding and evaluation of improved varieties of perennial species adapted to cool humid conditions, including smooth brome, orchard, timothy, tall oat, tall fescue, red fescue, Kentucky blue, and perennial ryegrass.
a–4–5–58 Breeding and evaluation of improved varieties of perennial warm-season grasses adapted to the semiarid and arid regions, including side oats grama, bluegrama, buffalo, big, little, and sand bluestem, switch grass and sand love grass.
a–4–5–59 Breeding and evaluation of improved varieties of perennial cool-season grasses adapted to the semiarid and arid regions, including crested, western, intermediate and tall wheatgrass, Russian and Canada wild rye, Texas bluegrass and green stipa grass.
a–4–5–60 Breeding and evaluation of improved varieties of annual grasses, including sudan grass, pearl millet, and annual ryegrasses.
a–4–5–61 Cytogenetics, breeding behavior and taxonomic relationships of grass species.
a–4–5–62 Seed production studies of grasses.
a–4–7–2 Evaluation of grasses and legumes alone and in combination for adaptation to range conditions.
a–4–7–3 Establishment practices, for permanent and rotation pastures, pasture renovation, and hay and grass silage.
a–4–7–4 Establishment practices for range revegetation in the Great Plains and intermountain region.
a–4–7–6 Cultural and management practices of rotation, renovated and permanent pastures; hay and grass silage meadows in the humid region.
a–4–7–7 Cultural and management practices of native and reseeded range lands of the Great Plains and intermountain regions.
a–4–7–10 Physiological responses of grasses to environmental factors.
a–4–7–12 Nutritive value and chemical composition of pasture, hay and silage herbage as affected by different cultural and harvesting practices.
a–4–7–13 Development of techniques for studying and testing forage crops (pasture and hay plants).
a–4–8–1 Breeding for improved varieties of pasture plants for the northeastern region.
a–4–8–2 Control of diseases of pasture plants in the Northeastern States.
a–4–8–4 The chemical composition of forage plants in the Northeastern States in relation to growth and utilization.

Mr. MARSHALL. The next item has to do with brush.

WEEDS AND BRUSH ON PASTURES AND RANGELANDS

Dr. MOSEMAN. It has been estimated that the annual loss caused by weeds on pasture and rangelands is more than 9 percent of the total products produced. This loss on 1,020 million acres of grazing land amounts to about $470 million annually. Studies have shown that weeds or brush may reduce grazing capacity and beef production as much as 25 to 35 percent. Wild garlic in pastures, which often results in off-flavored milk, costs North Carolina farmers more than $1 million annually. Many weeds in pastures are poisonous to livestock and cause losses amounting to more than $15 million annually.

Control of weeds in cultivated pastures and the renovation of pastures are the most serious problems in the northeastern region. In this area we need chemicals that will kill the brush or weeds in pastures, on steep slopes and on rocky soils that cannot be cultivated because of the erosion hazards.

In the southeastern region the control of annual and perennial weeds and woody plants in grass and legume mixtures are the most important problem.

BRUSH IN RANGE AREAS

In the north central and southwestern area, research on control of mixed species of oak, mesquite, sagebrush, and other range weeds is needed.

There are 8 species of oak brush that infest nearly 15 million acres of rangelands in Oklahoma, Texas, and New Mexico alone; over 5 million acres of grazing land in Colorado, Kansas, New Mexico, Texas, and Oklahoma are infested with sand sagebrush, skunkbush, shinnery oaks and other woody plants. Mesquite is still invading rangelands in Texas. In Oklahoma and Texas this has been enhanced in recent years because of the serious drought which has cut down competition from desirable grasses. In Texas alone, recent surveys show that mesquite occurs on 55 million acres of grazing land while most of the 93.5 million acres of rangelands in the State are infested with undesirable woody plant species of one type or another. We have used 2,4-D and 2,4,5-T to control sagebrush in Oklahoma and Texas. These experiments show a 60-percent increase in livestock-carrying capacity without any additional seedbed preparation, reseeding, or fertilization.

COMPLEX BRUSH SPECIES PRESENT PROBLEMS

We have found significant evidence in the past two seasons that the control of tall brush species such as mesquite encourages the growth of some of these other shrubby species and we need research to learn how to control that complete complex so as to give the range a chance to become reestablished.

In the Western and Intermountain States, coyote brush, chaparral, and associations of other woody plants are invading valuable grazing lands. In California alone, nearly 17,000 square miles, or 1 acre out of every 10, is covered with brush which greatly reduces the grazing capacity of pastureland.

We need a thorough and fundamental research program to fully evaluate ecological, chemical, cultural, mechanical, and biological

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methods of controlling woody plants on grazing lands and to determine the place of chemical control methods in the establishment, management, and production of forage crops.

BIOLOGICAL CONTROL METHODS

Many of the weeds in pasture and rangelands are difficult to control with known herbicides or through economically feasible cultural methods. In these cases study should be given to methods of biological control similar to those which have been developed for Klamath weed and other noxious plants.

The introduction and colonization of insect enemies of the Klamath weed have been generally successful in California. Work is now concerned with recolonization of the insects and ecological studies of the plant and the insects under the varied conditions that exist in the infested California area. Shipments of the insects are being made to other Western States for colonization in infested areas.

We have released an insect enemy of gorse in California. We need additional importations and releases of this type to control such serious weeds as Mr. Horan mentioned, the Dalmatian toadflax, halogeton, Mediterranean sage and a number of other species that are widely scattered and are not susceptible to economical control by the application of chemicals.

The $82,000 increase for research to control weeds will be divided with $60,000 going to the chemical, cultural, and other control methods for weeds and brush, and $22,000 applied to exploration for biological control through insects or diseases.

We would plan to start on the halogeton problem first in our biological control work and in our explorations in the Mediterranean area would include search for pests of these other weeds.

HALOGETON CONTROL AND RESEARCH

Mr. MARSHALL. How does the amount that you expect to use for halogeton compare with last year?

Dr. MOSEMAN. We have $40,000 this year, the same amount as last year.

Mr. MARSHALL. You expect to use how much this year?

Dr. MOSEMAN. We will continue the current funds, $40,000, in fiscal year 1956. Then we would plan to use $22,000 of our requested increase on this biological control study, which will be concentrated initially on halogeton.

Mr. MARSHALL. How are you coming with that control?

Dr. MOSEMAN. The only real effective control of halogeton on rangelands at the present time is through the use of reseeding. The latest estimate I saw from the Bureau of Land Management, which is carrying on that reseeding program, is that about 10 percent of the infested area, which totals around 6 million acres, can be helped by reseeding improved grasses. The research that we are doing is concerned with two major phases. One is the selection of chemicals for controlling the halogeton infestations in some of the areas where the weed is concentrated, around water tanks, roadways, railroad rights-of-way, and so on. We also are studying the ecological factors. That is, how does halogeton spread? What are the climatic factors that

inhibit its getting established? We have to get more of this background, to learn what the weak points are in the life pattern of the weed. This will determine where we can best hit the thing. We feel that biological control through natural pests such as insects or diseases offers some real promise because it is a scattered type of weed that would not be economically feasible to control through a spray program.

Mr. MARSHALL. As far as your control of weeds and brush are concerned, there again it is a continuation and extension of your present projects? There are no other projects proposed?

Dr. MOSEMAN. That is essentially correct. We would initiate a new line project on biological control of halogeton.

REVEGETATION OF GRASSLANDS

Mr. VURSELL. May I ask you this: There has been a great deal of pastureland plowed and cultivated during the war and the last number of years. Now, are you trying to reseed some of this land back, or is this work that you are doing mostly on rangeland that has never been cultivated?

Dr. MOSEMAN. We would direct our efforts toward both problems. On rangelands, research on forage crops and on weed control is needed to aid in getting better stands of grasses back on some of those rangelands that have been overgrazed during the war, during the recent drought periods, and where they have been invaded by brushy shrubs.

Mr. VURSELL. In other words, there has been a time many, many years back when there was less cultivation and more range, I presume.

Dr. MOSEMAN. That is correct.

Mr. VURSELL. That area was not infested with its brush and weeds to which you refer to the extent at least that it is now?

Dr. MOSEMAN. Brush and weeds have been brought in to the rangelands primarily through overgrazing. Where you have broken lands out of pasture and put them into crops for awhile, that cultivation has been rather effective in controlling brush and weeds except in certain areas like the Northeast. There you cannot always use good tillage practices because of the steep slopes and some rather rocky soils. This has brought about an invasion of some of the brushy species.

We would give attention to those pasturelands, rotation-crop pastures as well as the normal native range and permanent-type pastures. We expect to concentrate on all of those problems to the extent that we can.

PASTURE PROBLEMS IN THE CORN BELT

Mr. VURSELL. Let me ask you another question. Do you find the necessity of doing a great deal of work along the line you suggested here or in the building up of pastures, say, in States like Illinois where I live or Indiana or Iowa or is most of your work needed by the conditions you find in the Southwest and in the South and Northeast? In other words, I am interested in knowing why we are different or more fortunate, if we are, up in the Mississippi Valley.

Dr. MOSEMAN. I think we can say this: that the pasture and range problem is more critical in the West and Southwest and in the South-

east than it is in the Corn Belt area or the North Central States. However, the one thing that has impressed me is that in the Corn Belt area where we grow combinations of brome grass and alfalfa, for example, and where we use red clover, farmers don't appreciate the losses they are suffering on those crops. Those losses come about in two ways. One is the disease damage that cuts down the grazing capacity, cuts down the production of even the first- and second-year stands. Secondly, diseases and other factors cut down longevity of the stand. You can expect to keep alfalfa stands for only a few years. In past years we used to recall when we could keep alfalfa for 5 or 6 years and still have a pretty good stand at the end of that time. So I think that while the problem is most critical in the Southeast, where, through the years, they have not had good species of grasses and legumes, it is still an important factor in the North Central States and in the Corn Belt.

One difficulty is that farmers cannot measure the yield of their pasture the way they measure the yield of wheat. You don't have any real tangible evidence of how much or how little your pasture is really producing.

Mr. VURSELL. The facts are, it would seem to me, that our pasturelands do not produce the grass in anything like the quantity that we produce wheat and corn and things of that kind. I think I have noticed within the last number of years the pastureland does not seem to thrive and maintain its growth in forage that it used to.

Dr. MOSEMAN. That is due primarily to these diseases that I have mentioned. Also, we should develop new grasses and legumes to improve pastures. Particularly for Illinois, Indiana, and that area, the lotus or trefoil is a very promising legume that would certainly be a boon to the livestock people out there if they could establish it effectively and keep it in their pasture because it does not cause bloat.

Mr. VURSELL. For instance, by comparison, in the last 20 or 25 years we have more than doubled the production of wheat and corn in the entire south central Illinois area or southern Illinois but I do not think we have held our own on the production of grass on the pastures there. So probably and no doubt you do have the answer to it that we are being damaged in our forage and really not taking proper notice of it.

GRASS BREEDING

Dr. MOSEMAN. I think one thing we might point out is that the research in grass breeding and improvement is relatively young. It was back in about 1935 that the Congress provided funds for strengthening the grass breeding and improvement research in the Department of Agriculture. Prior to that time we had some incidental selection. Farmers would observe that a certain area in their pasture was better than certain other areas and they would harvest seed from that better spot. We had some improvement that way and also some improved selections from a few experiment stations. But, the real sound planned approach to grass and legume improvement through breeding was really not initiated until about 1935, only 20 years ago. That compares with several hundreds of years of plant-improvement work that we have had on crops like wheat and some of the other cereals.

Mr. VURSELL. I might add further that trying to hold the water near where it falls and not let it run off and erode the soil, that it

will play an important part with greater production of pastures, grass, in soil conservation and water conservation. We have had two droughts in southern Illinois in 1953–54. There has been terrific loss of nearly all of our corn crop in southern Illinois at this time and had we not had the biggest wheat crop we ever had we would have been in pretty bad shape. Fortunately, we had enough rain beginning after the corn was ruined in southern Illinois so that we have almost for the first time in 2 or 3 years normal rainfall in that entire area and water has filled up the ponds and soaked into the hardpan within a couple of feet and penetrating that and it looks like we are going to be in shape, better shape with the water table and better reservoir of moisture in the land than we have had for the last 3 or 4 years. We really got into a water shortage. The table was down in hundreds of towns and they were short of water, the smaller cities and so forth.

Mr. MARSHALL. Dr. Moseman, will you discuss cotton research now.

COTTON PRODUCTION RESEARCH

Dr. MOSEMAN. Our proposed expansion in cotton breeding and improvement is going to be concerned with improving the fiber quality and also disease and insect resistance. We have tried in recent years to transfer improved fiber qualities from some of our wild types to the commercial types grown in this country. I think the progress we made in developing the variety Pima S–1, that I mentioned earlier, indicates what we can do through breeding and improvement in cotton research. We have a backlog of breeding stocks totaling about 1,250 different lines. This includes wild types of cotton, different species or cottons from various centers of origin, and variants from domestic selections that are available for use in an expanded breeding program to bring in additional length, strength and fineness characters or other lint properties that the trade wants.

The literature on resistance of cotton types to insects is voluminous but we have no exact information as to how effective such control of insects might be. We need to determine whether we can incorporate into our cotton varieties resistance to some of the insects in the same way that we have resistance to hessian fly in wheat, resistance to the corn borer, and plant resistance to other insect problems.

We have found that there may be a possibility, in certain areas, of developing hybrid cottons. Cotton, as you know, varies all the way from about 5 percent of natural crossing up to about 50 or 60 percent. Under arid conditions we found we could increase cotton yields by about 15 to 20 percent where bees were brought in to cross the cotton types. This possibility should be explored further for those particular areas.

I think the effectiveness of our cotton genetics and breeding work has been diminished in recent years because of the need to spread our attention to a wider variety of problems. This has occurred because of the geographic spread of cotton production to California and western areas where we did not have much acreage of the crop in earlier years. It has occurred also because of the increase in mechanization, which means we have had to give attention to characters better suited for mechanical handling, ginning, and processing. This has meant that we have not been able to concentrate as effectively as we should on properties such as disease resistance, insect tolerance, and cotton

quality characteristics that should help us to expand the foreign outlet for our cotton varieties.

We also would plan, under the proposed increase, to expand the variety testing work. That is, for example, testing cotton varieties developed in our breeding program in Georgia, over a wide area to see whether or not they have regional adaptation or value in other States. We are doing a certain amount of that now but it is not on a well-organized, orderly basis and we plan to set up such a program. This would give us better information to advise farmers on suitability of different varieties for their conditions.

INDUSTRY SUPPORT FOR COTTON BREEDING

Our cotton breeding work is well supported by the industry. I would like to mention that the cotton growers in Arizona, the Cotton Planting Seed Association, have purchased 275 acres of land for an experimental farm. They expect to have the office and laboratory buildings provided by the State and will make this available for our Federal-State cooperative cotton improvement research in the State of Arizona. In the same way, the California Planting Cotton Seed Distributors organization has given considerable support to our cotton research work over the past years. At the present time they have plans to build a laboratory and office building at the station at Shafter and make this available for our cooperative research with the growers association and the California Experiment Station, at that location.

I think this contribution by the industry demonstrates their recognition of the value of the work in cotton improvement research.

FOREIGN PESTS AND DISEASES

Mr. VURSELL. Do you know whether or not they are bothered with all of these pests over in England and Western Germany and Holland and France as they are here or are they in worse shape? If so, what are they doing about it?

Dr. MOSEMAN. I think you will find crop pests wherever crops are grown. They may be a little different in foreign lands from what we have here. We know about the locust plagues that they have in the Arab countries. The Egyptians have the same difficulty with cotton insects that we have in this country. We find that there are certain diseases that may be more destructive in certain foreign lands than they are here. On the other hand, we may have some more destructive here than they are in foreign countries. We are trying, Mr. Vursell, to develop information all the time about the presence of diseases and pests in foreign countries that might become a problem here so that we can anticipate and be ready for those hazards on our farms.

IMPROVEMENT INVESTIGATIONS ON OATS

Mr. MARSHALL. Dr. Moseman, we notice you are asking for a sizeable increase on oats, something like a 30-percent increase over last year.

Dr. MOSEMAN. The oat crop is one of our most important cereals, sown on about 45 million acres in the United States annually, and it

ranks third in farm value among our cereal crops. Oats provide important elements for growth and productivity of livestock, particularly dairy animals and poultry. Farmers are still faced with heavy losses from oat diseases. We are not able at the present time to provide them with the adapted high yielding varieties that are able to resist these diseases.

Losses from rust in 1953 and 1954 averaged about $95 million in the three States, Iowa, Minnesota, and Wisconsin. In 1953 stem rust of oats was the most damaging for a quarter century. We know new races of rust exist in Canada, South America, and other areas that present a real threat to the oat growers in this country. Race 7–A of stem rust was found in Canada in 1952. In 1954 it was found in 18 States in the United States. It made up about 10 percent of all of our collections. The Canadian variety, Garry, is resistant to this race but a major part of our new lines in breeding trials, formerly considered resistant to all stem rust races, are susceptible to race 7–A. Race 263 of crown rust also was found among samples collected by the Winnipeg rust laboratory in Canada in 1953. We did not find this race in 1954 but we know that it is around and it is a great potential threat because almost all of our present commercial varieties of oats are susceptible to this race.

We have some foreign selections resistant to this race and by extending our breeding program we feel we can incorporate this resistance into our commercial types.

There are a number of other oat diseases that are very serious. We had losses from *Helminthosporium* disease in 1947 totaling $100 million, red leaf disease in 1949 causing about $50 million of loss, and from the *Septoria* disease in 1951 of about $25 million.

The emphasis we have placed on breeding for disease resistance in the last few years has caused us to neglect, in part, some of the attention to the agronomic characters, such as strength of straw, yielding capacity, grain quality, feeding value, and also the value of oats as a companion crop for grass and nursery seedings.

The increased use of fertilizers, with a generally higher level of soil fertility has required more attention to stiffer strawed varieties with shorter straw, that will not lodge under those conditions.

We already have a large background or supply of germ plasm material available for an expanded research program. We have 5,200 lines in our germ plasm bank of varieties available for breeding and improvement research. Recently improved breeding techniques have been developed including the use of X-rays and neutron irradiation to produce genetic changes in oats that can be used effectively in oat improvement.

Mr. MARSHALL. Dr. Moseman, my particular area is very much interested in the production of oats. We know a number of the problems that have been facing us. We have had trouble producing a good quality of oats because of the things you mentioned.

Over the years it has appeared as though the funds spent on research for oats have not been as of much benefit as for other crops. You are asking approximately a 30 percent increase in this 1 year, however. That is a terrific increase. Have you facilities where you can make proper use of that much of an increase in 1 year?

Dr. MOSEMAN. Yes. Our current funds, Mr. Chairman, total $152,500. We are asking for a $50,000 increase. We are confident

we can utilize these funds effectively. This work will be carried on in cooperation with the State experiment stations in the areas where the problems exist. We would utilize the funds by putting additional personnel in the laboratories which the State experiment stations provide for the cooperative research activities. Since we are working with a number of State experiment stations and plan to work with them in New York, Iowa, Indiana, Pennsylvania, North Carolina, and Idaho, we expect to have ample facilities to carry on this program.

Mr. MARSHALL. It is my recollection that we allowed you something like, in this item, of about $101,000 last year. Where did you pick up the additional $50,000?

Dr. MOSEMAN. There was an increase last year of $50,000. That was earmarked by the Senate and concurred in by the House.

What we are trying to do in this case is to bring the oat research program up to a level that we think will enable us to stay ahead of the many complex disease problems.

I am sure you are familiar with the experience the farmers in the Iowa-Minnesota area had when the Victoria — Richland hybrids came out early in 1940. They were grown for a few years and then we had the Helminthosporium disease that almost completely wiped them out in 1946. Clinton and other Bond hybrids were out only 2 or 3 years when race 45 of crown rust, hit those varities very severely. More recently we have released other varieties in attempts to meet this whole complex of oat diseases, but we are about two jumps behind the disease problem.

It means farmers are suffering losses for several years before we catch up with the problem and get them suitable resistant varieties. We would like to correct that by speeding up our breeding research work.

Mr. MARSHALL. This will be a good stopping point. We will adjourn until 1 o'clock tomorrow.

THURSDAY, FEBRUARY 3, 1955.

Mr. MARSHALL. The committee will come to order.

REPRESENTATIVE ACCOMPLISHMENTS OF HORTICULTURAL CROPS RESEARCH

Dr. Moseman, I believe it is your intention to discuss with us the horticultural research item showing a $50,000 increase.

Dr. MOSEMAN. Yes, Mr. Chairman. I have several items representative of accomplishments in our horticultural crops research program during the past year that I might review for your committee.

NEW FRUIT VARIETIES

We have developed several new fruit varieties for commercial use in 1954. These include four new peach varieties that are adapted to the Southeastern States. We have two additional strawberry varieties adapted to the Middle Atlantic States; a new canker-resistant blueberry for North Carolina and a new grape that is particularly desired because of its highly colored juice.

CONTROL OF FIREBLIGHT OF PEARS

I believe I mentioned yesterday the progress we have made in studying the use of antibiotics for the control of fireblight in pears. We find that streptomycin and terramycin compounds in combination are highly effective in controlling this bacterial disease.

TRISTEZA VIRUS DISEASE

Observations in Brazil over the past few years have indicated that orange and grapefruit trees that contain very mild strains of the tristeza virus have grown and fruited satisfactorily on nontolerant stocks even when the severe damaging strains of tristeza are present. The very mild strains appear not to cause much injury and in turn provide an immunity or barrier against the severe strains of the virus. This information, combined with the knowledge that the vectors in Florida are relatively inefficient as agents of virus transmission, provides the basis for understanding why the plantings in the Indian River section of Florida and the Rio Grande Valley of Texas have been able to survive even though we have had the disease in those areas for 20 years or more.

CONTROL OF BRIARS IN TUNG ORCHARDS

In our nut research work we have found that 2, 4, 5-T is effective in controlling blackberry briars and young tung seedlings which are the most troublesome weeds in tung orchards. These weeds not only cause loss through competition with the crop but they also have been handicaps in employing labor to harvest and gather the nuts. The growers in the tung area are enthusiastically adopting the practice of using 2,4,5-T to control these weeds.

NEW VEGETABLES

We have developed several new varieties of vegetables. Columbia, the first curly-top resistant snap bean of high commercial quality, was released in the spring of 1954 by the Department and the Oregon Agricultural Experiment Station. This is a pole variety of the Blue Lake type. Its curly-top resistance gives home gardeners and potential commercial bean growers in areas subject to curly-top their first opportunity to grow a truly high-quality garden bean resistant to that disease.

We released a new watermelon. It is a long, gray light-green watermelon named "Charleston Gray," which was developed at the Vegetable Breeding Laboratory at Charleston, S. C. Its unusual productivity, resistance to fusarium wilt and anthracnose, attractiveness, and market qualities have created great interest on the part of growers.

Twelve new onion hybrids have been released for growing in the North. This work was done in cooperation with the Colorado, Idaho, Indiana, Iowa, New York, and Ohio Experiment Stations.

SACO, A NEW DISEASE RESISTANT POTATO

We have produced our first potato variety that combines multiple-disease resistance, in cooperation with the Maine Agricultural Experiment Station. This variety has been named "Saco." It combines high yield, high dry-matter content, immunity from the common races of the late blight fungus, immunity from mild and latent mosaics, and high resistance to net necrosis.

I might point out that one of our principal difficulties has been in combining resistance to these different diseases that all converge in certain areas where potatoes are grown. A new variety is not of much value in such areas if it is resistant to only one disease and susceptible to 2 or 3 other diseases that may occur in the region.

STORAGE OF EASTER LILY BULBS

The handling of Georgia Easter lily bulbs has been improved by the development of storage in film-lined boxes. Easter lily bulbs grown in Georgia were packed in peat that contained various levels of moisture and stored at 31 degrees in bulb cases lined with polyethylene plastic film or rubber-base pliofilm. The films prevented loss of moisture from the peat. Earliness of blooming was positively correlated with the moisture content of the peat. Bulbs stored in peat alone became desiccated, required longer for forcing, and had a shorter storage life than those in film-lined cases.

NEW PLANT INTRODUCTIONS

In our plant introduction program during the past year we have brought in 9,224 new introductions comprising 1,844 horticultural items, 6,500 field crops, and 880 specialty crops. Quite a number of these introductions have been used already in our plant breeding programs as sources of disease resistance and other qualities that we have needed in our commercial varieties. I might say that Mr. Erlanson, head of our plant introduction section, has done an exceptionally fine job of handling contacts with foreign workers in the exchange of plant materials, and of satisfying the many requests from State, Federal and private breeders for new germ plasm materials.

PROGRESS IN NEMATODE RESEARCH

Our newly expanded research program on nematodes, which your committee will recall was increased last year, has resulted in the identification of a species of nematode in Texas rice-growing areas that had not been previously isolated in this country. This species has been destructive in Indonesia and other far eastern rice-growing areas. The new laboratory at Baton Rouge, La., cooperating with our rice research staff at Beaumont, Tex., found the new species. The new program that we were able to develop this year, setting up centers at Auburn, Ala.; Baton Rouge, La.; and Madison, Wis.; will make it possible for our research staff to assist the growers in the various cropping areas in more specifically identifying the type of nematode problems they have. This will permit more effective and economical control measures.

SOIL FUMIGANTS

We have found a new and improved method for applying soil fumigants. At the present time, the most popular of the soil fumigants that are used for the control of nematodes and other soil pests are applied in liquid form. This presents a serious problem with the application machinery because most of the chemicals are corrosive. The applicators are subject to a variety of other troubles such as leakage, stoppages due to the accidental presence of soil or other particles in the fumigant, and similar troubles.

It has been found that the adsorption of the fumigants on certain silicon compounds, on vermiculite, or on panacalite, does not interfere with their efficacy. Since the adsorbed fumigant is in granular form, it can be applied with several types of fertilizer distributors. This not only eliminates most of the troubles with the present method, but also eliminates the need for a special machine for application of fumigants. About 500,000 acres were fumigated in 1954.

Mr. HORAN. May I comment there? At the Florida State Experimental Station at Lake Alfred, we saw a new, I guess about a 36-inch disk-type sort of subsoiler that was being used. I assume that this work is all being done in close cooperation with the existing State experimental stations?

Dr. MOSEMAN. Yes; it is, Mr. Horan. I might point out that the original development on this came from a commercial company that succeeded in combining the fumigants with this silicon compound. We worked closely with them in testing the usefulness of the material and also in perfecting the formulation of it, then cooperated with the various State experiment stations in testing the material under different conditions. It is a solid compound rather than a liquid and it is very easy to handle and apply.

PREDICTING PLANT DISEASE OUTBREAKS

In our plant disease survey and inspection work we have found that the timely reporting of diseases and the reliable forecasts that we can put out contribute to the more efficient planning, by growers, for disease control. We can prevent costly or unnecessary controls that farmers might otherwise apply against downy mildews, particularly in North Carolina, Delaware, and Iowa, since we have improved the basis for forecasting these diseases. Our scientists have designed and constructed a dew-recording instrument that makes it possible to measure the amount of dew that is present, its onset and also the duration of dew deposition and other dew factors that are important in the development of these mildew diseases. This instrument is already in production.

NATIONAL ARBORETUM

Our National Arboretum program is going forward. We had about 40,000 visitors at the National Arboretum in the fiscal year 1954 which exceeded the total that we have had in any previous year. We had some special ceremonies marking the dedication of the Morrison Azalea Garden and the formal presentation of the azaleas that were given to the United States by the people of the Netherlands. We

have increased the living plant collections at the arboretum. We have about 3,000 specimens that have been transplanted in the different areas and have been more properly labeled.

The hurricane of October 15, 1954, caused rather severe damage. We had about 160 large trees that were felled. Some of these were over 100 feet high. In the azalea section, about 52 trees needed for shade were felled within a 10-acre area. The majority of this damage has been repaired or repairs are under way.

I have here some of the pamphlets that we have put out covering the National Arboretum. This one is a descriptive pamphlet with the maps showing how to get to the arboretum. And here is a brief description of some of the azaleas and rhododendrons at the arboretum.

I believe, Mr. Chairman, that covers the items that I had intended to review.

COORDINATION OF RESEARCH ON TREE DISEASES

Mr. MARSHALL. Dr. Moseman, I notice in your list of projects that you have one project on methods for tree-disease control in national parks. Are you reimbursed for that item?

Dr. MOSEMAN. No; we are not. You may recall that we had the work on forest pathology or forest diseases in the Bureau of Plant Industry, Soils, and Agricultural Engineering, prior to the reorganization of the Department last year. The work on forest-tree diseases was transferred to the Forest Service. The work on diseases of shade trees and other ornamental plants, including shrubs, was retained within the Agricultural Research Service. It is in our Horticultural Crops Research Branch. It is a continuation of a small portion of the work that we had under the Division of Forest Pathology in the old bureau.

The National Park Service is cooperating with us but they do not have a duplicating research organization. They expect the research of the Department of Agriculture to handle their needs in the plant-disease field.

Mr. MARSHALL. Are you duplicating any work in this item with the forestry group?

Dr. MOSEMAN. No, sir.

Mr. MARSHALL. You are not both carrying on the same work?

Dr. MOSEMAN. We are not carrying on the same work. We tried to draw the line, Mr. Chairman, between those tree species that are important forest species and other tree species, such as elms and trees of that kind that are not true forest trees but are used for ornamental plantings by individual homeowners, for street planting and shade purposes by not only the Park Service but also by local communities. The Forest Service, I might say, considers most trees of this kind as essentially weeds. They are not valuable forest species; they are incidental plants to them.

Mr. MARSHALL. Do you know if the Forestry people are carrying on any work in control of the Dutch elm disease?

Dr. MOSEMAN. I am not fully familiar with the Dutch elm disease control program. I believe that has been subject to some changes in recent years but I am not up to date on the extent of it at the present time. We are conducting research on elm phloem necrosis and some research on the Dutch elm disease, but the control activity is not part of our job.

Mr. MARSHALL. Are the Forestry people carrying out any research on the Dutch elm disease?

Dr. MOSEMAN. They are not, on the disease aspects. The disease-research work in the Forest Service is headed by Dr. Lee Hutchins who was formerly in charge of the Division of Forest Pathology in our Bureau of Plant Industry, Soils, and Agricultural Engineering. Under the reorganization, Mr. Chairman, we are able to maintain the same coordination of the work, even though it is now carried on partly in the Agricultural Research Service and partly in the Forest Service. The same coordination that we had previously between forest-tree diseases and other shade-tree diseases still exists.

Mr. MARSHALL. What results have you gained in finding a method of controlling Dutch elm disease?

Dr. MOSEMAN. I do not have the detailed information on our most recent work. We have sprays that are effective in controlling the vectors. We have worked on the breeding side in developing resistant types or varieties of elm. That work still looks rather promising but it is difficult to breed and test new tree varieties that have a high degree of resistance and require considerable time.

NEW PROJECTS

Mr. MARSHALL. You gave us a very fine discussion about your projects. What new projects are you proposing that you have not done any work on before?

Dr. MOSEMAN. We have two new projects that would be initiated with the increase we are asking for on the virus diseases of horticultural crops. I can mention those now if you would like, or would you prefer for me to go through this increase item? I can do it whichever way you prefer. The two projects we expect to initiate—one is on virus diseases of grapes in California and the Southeast and the second one is on the virus diseases of the brambles, that is, blackberries and raspberries. This latter work would be initiated at Beltsville.

Mr. MARSHALL. How much do you anticipate spending on those two items in the next year?

Dr. MOSEMAN. The work on grape-virus diseases will be done primarily at our laboratory at Fresno, Calif. About $12,000 is planned for that. Another $8,000 will be expended on this work at Meridian, Miss. The raspberry and blackberry research at Beltsville will receive $5,000.

SPREAD OF VIRUS DISEASES

Mr. MARSHALL. There is an item on page 15 that I am concerned about where you make mention of your plan of work on the identification of viruses and virus diseases. I wonder what you might mean by this statement:

> Methods of spread in the field would be determined and clean stocks of the varieties would be isolated.

Dr. MOSEMAN. In studying viruses, Mr. Chairman, we look first for the vectors; that is, the means of spread. Most of our viruses are spread by insect vectors. Some of them are spread by root grafts where the roots of an infected plant intermingle with roots of a healthy plant. We find that often the most effective way to control a

virus disease is through its means of transmission; that is, control of the insect if it is an insect-carried disease.

Mr. MARSHALL. Dr. Moseman, the point I had in mind was that we have spent a considerable sum of money in the past, upward of a million dollars, in studying this problem. Are we still at the point that we have to determine that? What have we done, in other words, with our past expenditure if we are just getting to the first step now?

Dr. MOSEMAN. I think I can explain that, Mr. Marshall, by pointing out that nearly every virus disease has a somewhat different and unique method of spread. We have different insect vectors. For example, I mentioned the tristeza virus disease that is not as serious here as it is in Latin American countries because we do not have in this country the efficient vectors for spreading the virus. In our wheat diseases, we have 2 or 3 different viruses. We have one that is soilborne. It causes a mosaic in our wheats. We have a second one that is transmitted by mites, the brown wheat mite and the winter grain mite. We have a barley virus disease that is seedborne. It is unique in that respect. We have many different kinds of insects that will transmit the different types of viruses. It means that we have to seek out the one or more vectors of these different viruses for the specific diseases and the specific crops. And that presents quite a problem, particularly when we know so little about the nature of the virus organisms themselves.

INCREASED BUDGET FOR RESEARCH ON VIRUS DISEASES OF HORTICULTURAL CROPS

Mr. MARSHALL. Dr. Moseman, would you explain to this committee the increase of the $50,000 that you are requesting?

Dr. MOSEMAN. The $50,000 increase is for virus diseases of horticultural crops. Virus diseases are causing heavy losses in many of our deciduous fruits, particularly in the stone fruits, the grapes, and the berries. Peaches are subject to phony disease and rosette in the Southeast; peach mosaic in the Southwest; peach yellows, little peach, and red suture in the Northeast; and X disease in both the Northeast and far western areas. These diseases together ruin hundreds of thousands of peach trees each year.

Sour cherries in many areas are infected with sour-cherry yellows, a disease that weakens the trees and reduces production of infected trees by about 50 percent. Mr. Horan is familiar with the situation in the Rogue River Valley of Oregon where we have the X disease virus of sweet cherries which results in the production of small, worthless fruit with some strains of the disease that completely kill the trees. It is making production in that area almost impossible.

WESTERN X DISEASE

Mr. HORAN. I might say that near my home, in fact, just across from where I live, at Wenatchee, Dr. Bud Reeves has been working on the western X disease for at least 15 years. It might be interesting to have a little discussion of that. I wonder what the progress of his work is. I know that he is very faithful to his research.

Dr. MOSEMAN. Mr. Reeves primarily is concentrating on trying to determine the nature of the viruses that are involved in these different

complex diseases. The western X disease, for example, has been identified in many different areas on many types of fruit, but the symptoms are always somewhat different. Mr. Reeves is studying the various forms of the virus to try to pin them down to find out what causes them, what the vectors are, and then what can be done about development of suitable control measures. He is finding that some strains of virus will completely mask expression of other strains of virus in a given tree. The question is, How can we identify what the virus problem is so that we can go about developing the proper control measures? Dr. Reeves has helped control officials in developing virus-free stocks. His work has been largely the basic exploratory work that can be passed along to the other cooperating scientists who are working in Utah and other States primarily on the specific, single viruses.

Mr. HORAN. Root stocks, of course, are one of the most important single factors in all horticulture.

Dr. MOSEMAN. That is certainly right.

Mr. HORAN. Are you the coordinator of all of the research that is going on in the various types of root stocks?

Dr. MOSEMAN. Yes, that virus work in the West is coordinated by Dr. Cochran, who is headquartered at the Riverside, Calif., Experiment Station. We have a good cooperative program among all of the Western States. They have work conferences once a year or every 2 years to review the progress of the work that is underway; and they have recognized Dr. Cochran as the man who provides the service of keeping them informed on the significant new developments that are going along in the field.

Mr. HORAN. Is a similar process used in the work on the citrus root stocks, also?

Dr. MOSEMAN. Yes; there we have work going on at the Orlando, Fla., laboratory, and at Weslaco, Tex., where Dr. Cooper is in charge. Then, also, we cooperate with the California Experiment Station at Riverside on citrus stock work.

VIRUS DISEASES OF POME FRUITS

Mr. HORAN. Do you know any reason why pome fruits are less susceptible to virus than stone fruits?

Dr. MOSEMAN. No; I am sure that I do not. The pome fruits do not appear to have the same severe virus problems that we have on the stone fruits.

Mr. HORAN. Has that fact been exhausted or has anybody researched it?

Dr. MOSEMAN. I do not think we have had an adequate opportunity to really get into it. Usually, we concentrate our research on those problems that are causing the greatest losses to growers and cause them the most trouble. It seems that the virus complexes in the stone fruits have been sufficient to occupy about all the time and resources we have had to put into the virus work on tree fruits. I will be glad to insert a more complete statement on the situation as to virus deseases of pome fruits.

(The following statement was submitted:)

Virus Diseases of Pome Fruits

Apples and pears are known to be subject to a number of virus diseases. Certain other disorders may be due to virus although this has not been demonstrated. Only one virus disease of these fruits, namely stony pit of pear, is known to be causing important economic losses in the United States. The following brief notes summarize our information on virus diseases of these fruits:

Apple mosaic: This disease which causes a conspicuous mottling of the foliage has been reported from most parts of the United States; also from Canada, Europe, and New Zealand, and can be transmitted by buds and grafts. It has been known for many years but is not very widespread in orchards and appears not to seriously injure the productive capacity of the tree.

Apple virus which kills Spy 227 rootstock: A virus is apparently present in a number of our apple varieties which kills Spy 227 stock. Spy 227 was developed as a vegetatively propagated rootstock of vigorous growth and resistant to woolly aphid. It was found, however, that when certain varieties were worked on it, the trees died. Further research has shown that this stock is killed by grafting on a small patch of bud tissue from these varieties. The virus appears present in most trees of Winesap, Stayman, Rome Beauty, some trees of McIntosh and perhaps other varieties. We have no evidence that the virus is injurious when these varieties are on seedling roots, although this has not been critically studied.

Rubbery wood: A disease present in England causes the Lord Lambourne apple variety to develop very limber or "rubbery" branches apparently caused by incomplete lignification of the wood. The disease has been transmitted by grafting and is considered to be a virus. The virus has been found in certain of the clonal rootstocks extensively used in Europe. It does not express symptoms on most apple varieties. English workers have indicated that some Delicious trees carry this disorder. It has not been recognized in the United States but the susceptible varieties such as Lord Lambourne are not grown here.

Minor diseases: False sting of apple has been reported from Nova Scotia and is transmitted by grafting. There are no leaf or twig symptoms. The fruit is badly distorted somewhat similar to stony pit of pears although there are no masses of stone cells as in pears. In Nova Scotia it has been reported on several varieties. It is not known to be present in the United States.

Flat limb, which may or may not be a virus, is a peculiar distorted stem condition of major importance on Gravenstein in Nova Scotia. It is also known in California.

Chat fruit is an obscure condition observed in England. The fruits are small and ripen 3 weeks early. The trees however are vigorous and appear in excellent condition. This may be a phase of the rubbery wood virus although it has not been demonstrated.

A possible virus in Virginia crab: Virginia crab has been used rather extensively as a stock in colder sections of the country. Twenty-five or more years ago apple varieties propagated on Virginia crab grew and made excellent trees. In recent years many trees propagated on this stock have made little growth. Wood under the bark has been noticeably pitted. This suggests that a virus may now be in the Virginia crab stock and results in poor growth of varieties worked on it. This has not been proved. The use of Virginia crab stock has been largely discontinued because of this condition.

Stony pit of pear: This is the most serious known virus on pome fruits in the United States. It is particularly serious in the Bosc variety. It appears to be increasing in the Anjou. Bartlett carries the virus but it does not produce symptoms in the fruit and apparently does not injure the productiveness of the tree. In Bosc and Anjou much of the fruit on infected trees will be gnarled and have stony areas in the flesh. The fruit symptoms are more severe in some seasons than in others. In bad years, it may cause the loss of 20 percent or more of the Bosc crop in the Medford, Oreg., area. It is less prevalent in Hood River and the Washington districts. It is present in eastern Bosc plantings although these are few in number. This Department is doing considerable work on the stony pit virus. It is known to be spread by propagation if infected buds or scions are used. It appears also to spread rather slowly in the orchard, presumably by insects. Experimental work is underway to determine if cultural and other growing conditions affect the development of symptoms in the fruit.

Other disorders of unknown cause: One form of the apple measles disease, in which dead areas occur in the bark at or near the cambium, may be caused by a virus. This possibility has not been investigated.

Bitter pit of apple is present in all apple stocks so far as known. A limited amount of work is now underway in the United States Department of Agriculture to try to determine if this may be the expression of a virus.

During the past 3 or 4 years a decline of pears has been noted in Washington State. Trees are low in vigor, often under conditions where this low vigor is difficult to understand. The possibility that this is a virus condition should be investigated.

Work on pome fruit virus in the United States Department of Agriculture: This Department has done no work on the apple viruses except a small amount to try to determine whether or not bitter pit is caused by a virus. The known virus diseases on apples appear to be causing little economic loss. However, it is possible that certain types of tree decline would prove to be virus in nature if they were thoroughly studied. It is possible that some of the viruses known to exist in apple actually are causing some injury to the growth and production of the trees.

We cannot say that the pome fruits are less subject to virus than the stone fruits although that may be. We can say that economic losses from known viruses, particularly in apples, appear to be much less than economic losses in the stone fruits.

VIRUS DISEASES OF GRAPES

Dr. MOSEMAN. I have mentioned some of the stone fruit problems in California. It has been found that grapes in California are subject to the Pierce's disease virus which generally kills the vine. This disease is also present in the Southeast and appears to be the cause of failure of bunch grape production in that area. At one time there was quite a bunch grape production in Florida and some of the other Southern States. That crop has diminished until it has almost disappeared. It is suspected that this Pierce's disease is important not only for the grape growers in the South but also there is evidence that it infects alfalfa and causes a decline of alfalfa stands when the alfalfa is planted near grape plantings. Alfalfa, of course, is used as an intercrop in some of our grape plantings in the South. The disease has a number of vectors, a number of insects carry it, different species of leaf hoppers, so it can be carried and spread very readily.

VIRUS DISEASES OF RASPBERRIES AND BLACKBERRIES

Raspberries and blackberries are also subject to virus diseases that cause serious losses in the Eastern States. Under our research program we would plan to more positively identify the virus diseases that are present. We would determine the methods of spread in the field, whether it is insect spread or whether there might be some other agent that is involved, and then develop clean stocks of the varieties that can be isolated and preserved. I believe that was part of the question you asked me a while ago, Mr. Marshall, that I failed to answer.

VIRUS-FREE PLANTING STOCKS

In connection with clean stocks, we are cooperating with different nurseries in providing them with basic stocks of strawberry plants that are free from virus. We have developed in strawberries, for example, a technique whereby we can tell whether a strawberry plant is infested with a virus by grafting the strawberry plant to an indicator plant that is very susceptible to the virus disease and shows it up promptly.

We develop the virus-free planting stocks and put them out with nurseries, with instructions that they agree to, that they will keep

that stock on clean soil, and maintain those virus-free stocks for release to the public. Virus-free strawberry stocks produce substantially larger yields of higher quality berries than do the infested stocks. And the disease-free plants have a longer productive life.

We have pretty well succeeded in cleaning up our strawberry varieties, both in the East and in the West. We have cooperated with the experiment stations on that problem. The Washington Agricultural Experiment Station has a planting out at Moxie, Wash. It is some distance from Yakima where they are developing a repository of virus-free fruit-planting stocks. They have carried this on as a State experiment station program for a number of years. It is really a job that is of importance not only to their State but the other States in the area and they have asked for our participation and help so that we can extend the value and benefits of that work to other States that want such stocks.

LOCATIONS OF NEW VIRUS RESEARCH

I believe that covers the statement that I have, unless you would like to know where we plan to carry on this work, Mr. Chairman. The work on sour cherry yellows is important in the Lake States and we expect to headquarter some work in Wisconsin, or possibly Michigan with about $12,000 of increase going to that location. The expansion of the stone-fruit virus research will be in the Western States, about $13,000 total; $8,000 of this will go to assist in the program in Washington; $3,000 in California; and about $2,000 in Utah. The grape research in California will be handled by the $12,000 program out there, with an additional $8,000 for research on the virus diseases of grapes at Meridian, Miss. The work on raspberries and blackberries at Beltsville will require the remaining $5,000.

Mr. ANDERSEN. What is the value of the annual grape crop in America?

Dr. MOSEMAN. I do not have the total figures on that.

Mr. ANDERSEN. Will you put that in the record for me? Also, how much do you spend on research in relation to the problems having to do with grapes?

Dr. MOSEMAN. We will do that, sir.

(The following statement was submitted later:)

VALUE OF GRAPE CROP AND EXPENDITURES FOR GRAPE RESEARCH

During the 10-year period 1941 to 1950, inclusive, the value of the grape crop to growers in the United States averaged $150,493,000. From 1951 to date prices to the growers have been somewhat lower and the value of the crop has averaged around $135 million.

Funds for research on grape production, breeding, propagation, and diseases for the 1955 fiscal year total $53,100.

The research covers mainly breeding, root-stock investigations, and propagation practices. In past years only about $5,000 per year had been spent on disease investigations. This was increased to approximately $10,000 during the current fiscal year. In addition, $9,600 is available for research on grape insects, which is headquartered in Ohio at the present time. Geographically the expenditures are as follows:

California	$21,000	Maryland	$21,100
Mississippi	9,000	Ohio	8,600
North Carolina	3,000		

DECREASE IN FUNDS

Mr. ANDERSEN. Mr. Chairman, I have a more or less general question I might as well ask at this point. Perhaps Dr. Shaw would answer it for me.

Doctor, we have approximately $1,800,000 asked for in increases, do we not?

Dr. SHAW. Yes, sir.

Mr. ANDERSEN. And offset by $460,000 in decreases. Now, I notice that all of the decreases are in control programs and all of the increases are in research allotments. Is that not an admission in itself that perhaps there is not the need for the additional research programs if the control expenditures are deemed to be in such good condition that you can decrease them by $460,000, whatever the figure is? Why should there, on the other hand, then, be the necessity of asking for an additional $1,800,000 in outright research.

Dr. SHAW. The reduction is not a representation that we feel there is a need for less effort on the control programs. It is associated with the Department's policy of trying to work with the States to get the States to assume a greater proportion of the control effort. Certainly it is not my judgment that there is any less need for the overall control work than there has been in the past. I am certain that as far as the research is concerned, there are many areas such as these that Dr. Moseman has been talking about, on these virus diseases, where we just do not know the answers as to what any of us might do, either the farmer himself, or any of us working cooperatively with him in the control program.

STATE CONTROL PROGRAMS

Mr. ANDERSEN. You anticipate, then, that the various States will take up the slack and replace the decreases recommended here for controls; is that it?

Dr. SHAW. That is the Department's position on it.

Mr. ANDERSEN. As to the facts in the case, do you have any recommendations from the various States to the effect that they are ready to assume this further expense in control?

Dr. SHAW. I must say that some of the States that are going to be affected by these cuts have said that they could take over, but other States have said they could not.

Mr. ANDERSEN. You will recall that last year there was quite a divergence of opinion in the Congress as to the justification for the Budget's request of cutting down here and there on control programs and going up here and there on research. I think, Mr. Chairman, that we should again carefully examine into the attitude of the Budget on that basic question this year before we finish the hearings.

Mr. WHITTEN. I agree with you, Mr. Andersen.

Mr. MARSHALL. If my colleague will yield to me, I think you may recall that the folks in Minnesota entertained the State commissioners of agriculture. We were very happy to have the State commissioners of agriculture come to our State. However, their recommendation along the lines of control were vastly different from the statement of

Dr. Shaw since they were quite insistent, Dr. Shaw, that the Federal Government assume more responsibility on the control of disease.

Dr. SHAW. I am aware of the fact that a number of the State directors have presented that position. It has been the Department's policy to work with the States to try to get them to take over a larger share of this responsibility. Certainly, not all the State departments of agriculture are in sympathy with that policy.

Mr. ANDERSEN. Dr. Shaw, you will recall that some members of this subcommittee have felt in the past that in relation to the control work, such control, just as diseases, have no respect for State boundaries.

Dr. SHAW. That is right.

Mr. ANDERSEN. We have felt that if there is any field that the Federal Government is entitled and justified in being in, it is especially so in relation to these large control programs having to do with more than one State. I fear that if we gradually take off the guiding hand of the Federal Government in relation to a lot of these control programs, and depend on more or less ineffective control by some of the various States involved, perhaps 100 percent control by 1 State and 50 percent by its neighbor, that the whole program will suffer.

Mr. HORAN. Mr. Chairman, may I comment on that? I happen to have the picture of Thomas Jefferson hanging on the wall. I am proud of it.

FEDERAL AND STATE RESPONSIBILITIES FOR CONTROL PROGRAMS

This whole problem involves the sovereignty of the several States and their ability to meet any given problem. I have lived through one of these control programs and I want to tell you that it works better to have the State assume its intrastate responsibilities and leave the interstate phases of it to the Federal Government.

It is a normal practice that ought to fit in with our form of union between the States. I was quite encouraged by the attitude of the Florida people, that being fresh in my mind, and they were not only willing but they were insistent on stepping up their control work. We had the head of their quarantine with us during our trip down there. They felt and the nurserymen felt that they could control the matter within the State; the phases and the proper place for the Federal Government to step in is what my colleague from Minnesota here has indicated, where there is danger of interstate shipment of the disease or of nursery stock that might be infected.

In my own State, we have long had State control of the infected fruit which in some cases is incapable of transferring such diseases as San Jose scale to anything as long as it is carried on fruit. In fact, all you would have there is the mark where the scale was. But to make our own applegrowers toe the line and take care of their orchards, we have had to have some discipline, so for a matter of better than 40 years we have had a law in the State of Washington denying interstate shipment by our own State government of that which might cause trouble in other communities within the State. That is very definitely a very serious thing when you get down to the nub of it because we want our States to be strong. The strength of our union is the strength of all of the several States.

Personally, I would like to see—and I am glad you brought it up—I would like to see this thing explored fully and the reason for this action better justified and better explained than has been done. I think that a very good case can be made for the insistence that the States themselves take care of this thing and that they protect their own industries by maintaining a discipline of those who participate in those industries; and a clear picture of where the Federal responsibility and authority should be allowed to enter, not insist on the Federal domination, but to permit the Federal domination in any given case.

Dr. SHAW. Dr. Clarkson and Mr. Hoyt, when they come before you, can discuss in detail the discussions they have had with the various State officials on this problem. I think it might be more satisfactory from your standpoint if we could have a fuller discussion at that time.

Mr. ANDERSEN. I think so. I had in the back of my mind the hog disease, vesicular exanthema, which was permitted to run wild for a good many years in California without any real attempt by the State of California to eradicate it. Now, if the Federal Government had stepped in previously under some authority, we would not later on have had the losses which accrued to many of the States.

Mr. HORAN. As you say, that was vesicular exanthema.

Mr. ANDERSEN. I give credit to Mr. Horan's home State. That State is a great State in looking forward and taking care of programs of this nature. So is Minnesota and certain other States. But there is, as you all know, a very great difference between certain States in what they will do in affairs of this nature.

Mr. HORAN. And I want to say this ——

Mr. ANDERSEN. And I respect your viewpoint, Mr. Horan. Certainly, we have got to permit the States to do everything they possibly can do intrastate, but I am referring, as you know, to interstate traffic.

Mr. HORAN. That is right.

Mr. ANDERSEN. And I think it is a very important thing, gentlemen, and I personally do not intend to sit here and see these control programs suffer from lack of appropriations. Such a policy will prove to be very expensive in the long run.

Mr. HORAN. I lived through the pear psylla program which was not very popular. A condition prevailed not unlike that associated in the popular mind with Kentucky where the "revenooers" showed up to do a job that the county sheriff could have done better.

Mr. ANDERSEN. I hope, Mr. Chairman, that we will have more discussion on this before the hearings end.

EFFECT OF RELAXING FEDERAL CONTROL PROGRAMS

Mr. WHITTEN. At this point, Mr. Andersen, I would like to point out one or two things which have been developed in the hearings on this committee back through the years. There has never been any disposition, so far as I could tell, by myself or any member of the committee to keep States from doing something to meet these problems. Rather, we have taken the position of trying to get the States to do all they will. Unfortunately, in many fields they will not act or have not acted. At the Federal level, it is difficult to require that the States take this action. You can lead them and help them and urge them, but that is about the end.

Now, the reason, as I have seen it, why the Federal Government has to stay in several places that it would be well if it did not, is that the 48 States are sovereign, have certain powers under the Constitution. But I have seen so many people say that one of the reasons for the prosperity of the United States is the fact that commerce moves back and forth throughout the United States without all these barriers that you find between the countries of Europe. If you do not have a Federal program in many of these fields, a Federal control program, a Federal inspection program, where each State has some confidence in the materials and livestock and things that come from some other State, you get to the place where one State will penalize the other State and then you end up with embargoes, or something similar, and we get right into what they have in Europe.

Now, having the national interest and the national program to consider, we should do all we can do to get all the help we can. But it is awfully shortsighted for the Federal Government to move out of a serious national picture when they do not even know whether the State will take it over or not. And if the State has not up to that point, it is a fair indication that it will be hard to get them to do it. So that is another aspect.

Mr. HORAN. In that case we can impose quarantine on the condition that should deny an industry within the sovereign State access to the American market. But it seems to me, or at least I trust that better persuasion than that sort of force can be employed—the persuasion of pure reason in this matter, because there is a matter of division of labor and responsibility.

Mr. WHITTEN. Research is always good but I have always thought that we ought to use the best answer we have until we find a better answer. That is true of better control programs. There may be better ways to handle them, but I have been skeptical of turning loose whatever we are doing until we have the other set up.

RESEARCH

ENTOMOLOGY RESEARCH

Turning now, Dr. Moseman, to entomology research, I notice that you have several items of substantial increase. Do you have any general statement as to what work you have been doing in those fields and what is contemplated to be done with the extra funds?

Dr. MOSEMAN. Mr. Chairman, I would like to review some of the progress made in our program during the past year. First I would like to mention the work that we have done with poisoned-bait sprays in the control of fruit flies.

BAIT-SPRAYS FOR FRUIT FLIES

One of the significant features of the studies carried on in Hawaii with insecticides for the control of fruit flies has been the further development of poisoned-bait sprays that contain malathion or parathion as the poison. We have used these with hydrolized or partially hydrolized protein as the attractant. In one instance we had a crop that was worth about $750 per acre that was fully protected with these materials at a cost of only about $30 per acre. Without the protection this crop would have been mostly unsalable.

Treatment with malathion can be repeated as close to 2 days before harvest time without creating a residue hazard. This is important since fruit flies generally concentrate on ripening or ripe fruit and you must treat to harvest time.

MALATHION ON VEGETABLES

Along similar lines, experiments in Maryland demonstrated that malathion residues on several common vegetables were reduced to very low levels when the treated vegetables were harvested within one hour from the time the insecticides were applied and then washed in the manner that the housewife ordinarily follows in preparing the materials for cooking. The treated vegetables included such things as lettuce, broccoli, kale, snap beans, beet tops and roots and tomato fruits. Samples of these were taken and it was found that the residues were reduced to about 1 to 2 parts per million.

On unwashed, treated vegetables there was a residue of as much as 19.5 parts per million of the malathion residue.

SWEET POTATO WEEVIL CONTROL

We found in our tests in Louisiana, on sweet potato weevil control, that the application of about 50 to 75 pounds of dusts that contained about 2 percent of dieldrin, per acre per season, gave sufficient control of the sweetpotato weevil. An increase of approximately 47 percent in yield of weevil-free potatoes was obtained from plots where the dieldrin was applied, as compared with untreated plots. We also found promising results in preliminary experiments where heptachlor and endrin were substituted for dieldrin.

CONTROL OF TOBACCO HORNWORMS AND BUDWORMS

We have developed some effective methods for controlling hornworms and budworms on tobacco. Of the effective insecticides generally available to tobacco growers, TDE presents the least hazard, not only to persons making the applications, but also to crop handlers and to smokers. Its use was stressed in 1953 and 1954 in order to reduce the use of lead arsenate and paris green, which leave undesirable arsenical residues on the cured tobacco, and to prevent the use of toxaphene and lindane, which may seriously impair the flavor and aroma of the manufactured product. However, TDE is slower in killing hornworms than is desirable. Endrin is more effective and kills insects more rapidly. Reports from 2 manufacturers indicated that the flavor and aroma of cigarettes will not be impaired by applying endrin to growing plants at the rate of 0.4 pound or less per acre by application. Field experiments have shown that this dosage gives satisfactory control of the tobacco hornworm. Endrin and TDE were recommended for the control of hornworms and budworms on tobacco during 1954.

MITES ON SMALL GRAINS

We found insecticides successful in controlling mites on small grains. I mentioned earlier that mites transmit a mosaic disease of small grains. Various chemical formulations were tested against the brown wheat mite and the winter grain mite, in cooperation with the

Kansas and Texas Agricultural Experiment Stations. The winter grain mite was effectively controlled in Texas by the application of one of the organic phosphorus compounds: parathion, TEPP, metacide, or malathion—at a dosage of 0.25 pound per acre. Three organic sulfur compounds, ovotran, sulphenone, and aramite, at a dosage of 0.33 pound per acre also gave satisfactory control. The sulfur compounds are of interest because of their relative nontoxicity to warm-blooded animals, which is one of the hazards we face with phosphorus compounds. These organic sulfur compounds can be applied to infested small grain fields with little hazard to the applicator or danger to farm animals subsequently grazing in the treated fields.

GRANULAR INSECTICIDES FOR CORN BORER CONTROL

We have been studying granular insecticides in relation to the European corn borer. Granular insecticides, including DDT or heptachlor at 1.5 pounds; EPN at 0.5 pound; and endrin at 0.4 pound, hold promise for control of the European corn borer, according to results of 2 years' tests conducted by USDA entomologists at Ankeny, Iowa, in cooperation with the Iowa Agricultural Experiment Station. The granules readily rolled into the whorls of young corn plants and were particularly effective against the first brood borers. In applications made later in the season, the granules dropped into the leaf axils of the plants and controlled borers that were feeding in those areas. More effective in corn borer control than sprays or dusts in these tests, granular formulations had the decided advantage of leaving smaller amounts of harmful residues on the corn plants.

SYSTEMIC INSECTICIDES FOR COTTON

We are studying systemic insecticides applied as seed treatments and they appear promising against several cotton pests. A new concept of cotton insect control was opened up in 1950 when it was discovered that certain cotton pests could be killed by feeding on plants grown from seed treated with certain insecticides. New compounds have been discovered each year which have this property. However, until recently the susceptible pests were sucking insects, largely aphids and spider mites.

A new class of phosphorus compounds recently made available for experimental use has shown outstanding effectiveness in laboratory tests against several species of chewing insects, including the boll weevil, thrips, and cotton leaf perforator, in addition to aphids and spider mites. One of these compounds, American Cyanamid compound 12008, was tested in field plots at several locations during 1954 and gave thrips control lasting up to 5 to 6 weeks after planting. If thrips, aphids, spider mites, fleahoppers, and overwintered boll weevils could be controlled on cotton for up to 6 to 10 weeks after planting by merely adding the insecticide to the planting seed, a tremendous advance would have been made in cotton insect control.

I might mention in this connection the point that the chairman called to our attention yesterday, that one of the difficulties in controlling the boll weevil is the intermittent, frequent rains that you have in some areas that tend to wash off the insecticides. If we can develop these systemic materials, it will be helpful in getting the

poison in the plant so that it will be effective regardless of what the weather conditions are.

BIOLOGICAL CONTROL OF THE CABBAGE LOOPER

We have found a virus disease that is effective in controlling the cabbage looper. Cabbage looper attacks a number of plants—cabbage, lettuce, and broccoli. And this new disease appears to be particularly virulent against the insect and is contagious as well as extremely fast acting. In field tests in Arizona in 1954 on cabbage loopers infesting broccoli the results compared favorably with those from insecticides. Similar material has been prepared for field tests in other States in 1955 on the looper on both cabbage and lettuce. Use of the virus, if found practicable under commercial conditions, would possess the distinct advantage of involving no residue hazard to man or other animals.

ERADICATION OF SCREWWORMS FROM CURACAO

One of our most, spectacular projects this past season has been the eradication of the screwworm on Curacao which is a 170 square mile island in the Caribbean Sea. Tests this summer show that the screwworm fly, which is one of the most serious pests of livestock, can be eradicated by releasing laboratory-reared sterilized male flies. Research established that male screwworm flies can be made sexually sterile by exposure to gamma rays. The females of this insect mate only once in their life and if this mating is with a sterilized male, the reproductivity of the female is completely destroyed. These findings were exploited on Curacao by releasing large numbers of sterilized males which competed successfully with the fertile natural male population. Releases of sterilized males at the rate of 100 per square mile failed to achieve eradication, but when the number was increased to 400 per square mile apparent eradication was obtained in about 2 months. The success of this revolutionary principle of insect control on Curacao suggests that eradication of the screwworm may be feasible in the Southeastern States and may be applicable in the control or eradication of other important economic insects.

BIOLOGICAL CONTROL OF KLAMATH WEED

I mentioned yesterday the control of the Klamath weed by insects. This weed, which infests nearly half a million acres of rangeland in California has been brought under biological control by insects. Recovery of the weeds after control by leaf beetles of *Chrysolina gemellata*, introduced from Australia, has been less than 1 percent. These beetles show some tendency to have different dispersal patterns in different geographic areas, and continued observations will be necessary as the species are distributed to new areas of the northwest United States.

The recovery is less than 1 percent after the beetles have infested an area. It is a very effective control. We do not know how to account for the different dispersal patterns, whether that is due to the host plants, the environmental factors or whatever it may be; we do not know. So we are continuing to study that to determine how effectively we can introduce these beetles into other areas.

ORGANIC PHOSPHORUS COMPOUNDS

I mentioned that the organic phosphorus compounds are rather toxic to warm-blooded animals. Our Insecticide Section is giving special attention to these phosphorus compounds. These insecticides appear not to produce tolerance in strains of insects that have received treatments generation after generation. There are some exceptions to that statement because there are a few insects that can develop a certain degree of tolerance to parathion. But these insecticides, the phosphorus compounds, are effective at surprisingly low dosages and they require extremely sensitive analytical methods to determine the residues on treated crops.

During the past year, an accurate method of analysis has been developed for one of the most recently introduced phosphorus insecticides, a Bayer compound, which has shown promise against a number of types of insects. There is a closely related compound that results from the breakdown of this Bayer compound, that has been reported to be much more insecticidal. This material has been studied and its structure has been determined. This compound promises to be the basis for the development of a series of insecticidal phosphorus compounds of a new type. Some of you may have seen the article in the Washington Star last evening about the compound DDVP, which the Public Health Service has announced for housefly control. That is this breakdown material that I mentioned.

GRANULAR INSECTICIDES

Our Insecticide Section is also working on the formulation of chemicals with accessory materials in a granulated form. This is important for application of insecticides to the soil surface beneath vegetation to control pests such as the white-fringed beetle and the Japanese beetle. Granulated formulations of dieldrin, aldrin, and chlordane are proving very effective. The physical nature of this material permits it to drop through the foliage to the ground, where it is most effective. The use of granulated insecticides is a recent development and many factors such as the nature of the inert carrier, size range of granules, and ease of breakdown of the granules which influence the effectiveness have had to be evaluated.

We have carried on studies during the past year to develop tentative purchase specifications for several of the formulations for commercial use.

I believe, Mr. Chairman, that completes the material that I planned to review.

EUROPEAN CORN BORER

Mr. ANDERSEN. One question, please. What advances have you made during the last 12 months in doing something worthwhile about the corn borer, Doctor?

Dr. MOSEMAN. The corn-borer problem has certainly been in the foreground the last several months because of the heavy losses we had this year. We feel, Mr. Andersen, that we do have effective control measures if they are applied promptly when the borer incidence develops and are followed out through the season. We have two different insecticides that we can apply. One of these is DDT; the

other is ryania, an alkaloid from a tropical drug plant. DDT can be used on field corn. Two applications during the season, costing about $3 per application, should effect good control with this material. On sweet corn, it is necessary to use more applications, possibly 3 or 4, and that would run the cost up to about $12 per acre. Ryania, the organic plant material, does give effective control and presents no residue hazard on sweet corn. Its cost is about the same as for DDT.

I think the important thing that farmers must be aware of this next season is to watch carefully and when the populations of egg masses reach the point where they should apply their controls, they should get out and get it done. I think there was probably a little tendency this past year to gamble just a bit.

Mr. ANDERSEN. You have not developed anything like the Curacao insect to attack the corn-borer moths? Is there any such possibility?

Dr. MOSEMAN. We are working on biological control methods and have released a couple of pests. One is a beetle and the other a protozoan disease. They have been out, I believe, for only a year or two. It is a little too early to determine how effective they will be in the main Corn Belt area where the borer population is now heavy. We are certainly studying that approach with the corn borer.

Mr. ANDERSEN. My thought is that there is a considerable amount of money involved in the corn crop compared with a lot of these others and I hope that the Department will give it its relative degree of importance in research.

ARMYWORMS IN MINNESOTA

Mr. HORAN. What about this armyworm infestation that was so virulent in Minnesota last summer?

Dr. MOSEMAN. In Minnesota? I would like to refer that to Dr. Knipling, if I may. He is familiar with that insect problem.

Dr. KNIPLING. The armyworm is one of these sporadic types of insects. There are several species in the armyworm and cutworm groups. For some reason, in the last 2 or 3 years, they have been more severe in many parts of the country than they had been before. That is true in the South and Missouri and Oklahoma and up in the area you talk about. Frankly, we do not know why they have increased to the point that they have and have caused the amount of damage. We think it is just one of those cases where they are normally kept in check by natural enemies and diseases. They have gained the upper hand and we think that the cycle will fall back. Maybe droughts or excessive rains have favored the insect and have been detrimental to the natural enemies that normally keep them in check. We have, wherever we have had the opportunity, tried control methods. We find that toxaphene is perhaps one of the most economical and most effective ways of dealing with these cutworm problems when they do occur.

TOBACCO INSECT CONTROL

Mr. NATCHER. Mr. Chairman, as you well know, the tobacco industry is passing through a critical period at the present time. In fact, the farmers of my State are worried about this particular matter almost as much as they are worried about the 1954 Agricultural Act

setting forth flexible price supports. I am glad to hear, Dr. Moseman, about the research in regard to TDE. This means a lot to the States that are producing tobacco, as you well know, and these gentlemen in the Department are naturally acquainted with this problem. I would like to ask you, Dr. Moseman, as to whether or not any brochure, publications or pamphlets have been printed and distributed by the Department in regard to your research in regard to TDE?

Dr. MOSEMAN. I believe that information has been released, Mr. Natcher, both directly by the Department as announcements and to the State experiment stations. We work very closely with the extension agronomists; in some States they have extension tobacco specialists, as you know. We put this information in their hands just as soon as it is ready for use. So that information has been put out.

Mr. NATCHER. I certainly have enjoyed your fine statement, Dr. Moseman in regard to this particular problem. I want to thank you.

Mr. WHITTEN. I would like to point out that the Department of Agriculture this year has had appropriated for the Agricultural Research Service $89,190,287. In addition to that, you have had certain money for the Agricultural Marketing Research of about $10,223,000. Those large figures include the various control programs. It includes meat inspection and payments to the States. So the Agricultural Research Service in the current fiscal year has $35,822,000 for research.

In addition to that, the Federal Government paid this year to the States for research $19,453,708. In addition thereto, the sum of $10,223,000 was provided for marketing research including agricultural estimates, which I do not not have separated here but of which a considerable part is research. I mention that to show that certainly the amounts this year provide a lot of people and money to deal with research problems. That being true, it follows that we must consider the need for increased amounts in the light of what you already have. I mention that as you start your testimony so that you might realize that, with national deficits and failure to have a balanced budget and all the rest of the claims, it will take strong support for new projects to meet the tests that the Congress and the country have to put for the increases in expenditures.

We would be glad to hear from you on the line projects you have in mind for increased amounts of money and we would like for you to direct your testimony to why, with the funds you are already expending in these fields, you cannot meet the job.

INCREASE IN FUNDS FOR RESEARCH

MEXICAN FRUITFLY

Dr. MOSEMAN. The first item is research on the control of the Mexican fruitfly. That request involves $125,000 of additional funds. The Mexican fruitfly is a very destructive insect. It attacks grapefruit, oranges, mangoes, peaches, pears, apples, and a number of other tropical or temperate-climate fruits. For many years the Mexican fruitfly has been present in northeastern Mexico. It has invaded the Rio Grande Valley of Texas annually ever since the late 1920's. In

the Texas area, where the lack of fruit in suitable stage of development causes the fly to disappear before the following winter, the problem is not so critical. Within the past year, the Mexican fruitfly has been found in northwestern Mexico close to the California border and early in August 1954, it was found at San Ysidro in California. This finding has created a serious emergency that is causing the California industry extreme concern. The insect might easily become a pest in California and spread to other parts of the country, if it is allowed to establish itself permanently in that State, because there are suitable fruits available in southern California throughout most of the year that favor the permanent establishment and buildup of the insect, as contrasted with the situation that exists in the Rio Grande Valley of Texas.

The Agricultural Research Service is cooperating with the California State Department of Agriculture in the suppression of the pest, but there is urgent need for research to develop promptly the most satisfactory measures for economical control.

A meeting was called by the industry in Los Angeles on July 1, 1954, which was attended by the State experiment station and State control officials, and by representatives of the Department, to review the research and control activities and needs. The California experiment station is conducting some research on it. In order to meet the research requirements, we have made some rather substantial adjustments in our present program. We have shifted a total of $74,855 away from other projects in order to concentrate more effort on the Mexican fruitfly research. The main adjustment, of course, has involved the reassignment of personnel from other projects.

SHIFTS IN RESEARCH FUNDS

Mr. ANDERSEN. You have the right and power to shift funds within the Research Administration almost to any degree, do you not?

Dr. MOSEMAN. There is a limitation. I believe the level is 10 percent between projects approved by the Secretary.

Mr. ANDERSEN. Ten percent within the administration setup?

Dr. MOSEMAN. I think that should be explained by Mr. Grant of our Department budget office. Since we have reorganized it is somewhat different from our former limitations.

Mr. GRANT. Mr. Andersen, within the item for research, they do have the right to make adjustments between lines of work.

Mr. ANDERSEN. To what degree?

Mr. GRANT. Without limit.

Mr. ANDERSEN. I was thinking that.

Mr. GRANT. Mr. Andersen, within the item for research, they do have the right to make adjustments except that we do try to use the funds in accordance with the plan shown in our justifications.

Now, administratively the Department regulations permit shifts between financial projects of up to 10 percent. If it goes over 10 percent, then it must come to the Secretary's office for approval. There is a limit of 7 percent on transfers between appropriation items as authorized by the Department of Agriculture Organic Act of 1944.

Mr. ANDERSEN. I have in mind what the chairman just commented on. It does seem to me that if there is anything really urgent which

arises, that you have within your own power immediate access to funds.

Dr. MOSEMAN. We have done that in this case, Mr. Andersen, in shifting $74,855 from other work. I might say that while we recognize our authority to shift funds, we also realize that there are a number of research projects that your committee and individual Members of Congress are interested in seeing go ahead at their present level.

Mr. ANDERSEN. You bind yourself more or less to what you present to the Congress unless there is a real need for change.

Dr. MOSEMAN. That is correct.

Mr. ANDERSEN. Getting back to the chairman's premise, it does seem to me that you gentlemen are going to be forced to give a very good argument as to why you need these raises in research funds throughout the Bureau, because the financial picture does not look too bright when we consider that we will have about a $5-billion deficit this year.

Dr. MOSEMAN. In this particular case, I might say that the original estimates on research that would be required were at the level of about $275,000. We did our best to reduce that amount, cutting corners wherever we could, and the figure that we finally came up with was about $175,000. We expect to take care of a portion of that amount by making a major part of the shifts that we have made this year, permanent shifts in our program. That is the reason we have finally come down to the amount of $125,000 as the estimate we are presenting today.

CURRENT RESEARCH ON MEXICAN FRUITFLY

Mr. WHITTEN. At the moment, how much money have you spent for the last number of years on this Mexican fruitfly research?

Dr. MOSEMAN. About $54,000 is what we were putting in previously.

Mr. WHITTEN. Annually?

Dr. MOSEMAN. That is correct, sir.

Mr. WHITTEN. With that $54,000 what has your program consisted of? Does that mean you have 3 or 4 people who are devoting their time to work in connection with the fruitfly?

Dr. MOSEMAN. We have been carrying on a program that is headquartered primarily at Mexico City.

Mr. WHITTEN. We had the privilege several years ago of going by there, and we have been carrying it each year now, at a rate of $54,000 per year. We have a fly that comes across the border. He does not know about borders and he does this damage to the fruit, and it is a serious damage. As you say, it spreads. All I am talking about is the research aspects of it. What has the annual program consisted of?

Dr. MOSEMAN. We have been concentrating on developing more effective spray materials and the material used at the present time, a tartar emetic compound, is a result of that research.

Mr. WHITTEN. I am trying to break it down in manpower, facilities, and all that. Have you had certain specialists who work with this program each year whom you pay? What part of it is employees? I am asking for an approximation. I want to know how it is set up and how it operates from year to year.

Dr. MOSEMAN. We have the program broken down into different phases of work. I mentioned work on spray materials. We are also doing work to determine the possible plant hosts; we are doing research on lures—that is, the material that will attract the insect for traps; and so on. We are doing work on commodity treatments. After fruit gets infested, we have to find some way of treating it. We have developed a hot-water treatment that they use in connection with this insect in Texas for the citrus crop.

I mentioned the work at Mexico City. We have also been working in the Brownsville, Tex., area on the Mexican fruitfly because that is where it has been serious up to the present time. I cannot, Mr. Chairman, at the moment give you a breakdown of just how much manpower is going into each line of work.

NUMBER OF RESEARCH WORKERS REQUIRED FOR PROJECT

Mr. WHITTEN. I am trying to get it in a general way. The point I was building up to is this: Of course, if money was limitless, it is doubtful if you could have too many people working on research, unless they got in each other's way. But there is a considerable difference in research as against control. If you were operating a control program, and this problem had spread to California, to Colorado and to Georgia, and various other places, it would take many more people to deal with a wider spread area. I can recognize that in a control program. But in the field of research, you would reach the limit of how many you really needed for research much quicker than you would on a control program.

Now, the wider spread the problem, and the greater the threat to the rest of the country, the greater the need for the research. But it strikes me that having a unit in each State doing work on sprays is carrying it too far. I am just raising the question as to why it is that you feel it would be helpful to have more people in more locations. I am asking you for your view. I am not trying to say that it would not. I am just asking you to prove that it would.

Dr. MOSEMAN. I think we can look upon the need for additional people as determined by the magnitude of the problem. Geographic spread is one measure of magnitude where you have the problem in many different areas and you need more attention to it.

Mr. WHITTEN. You need the answer worse. But it does not necessarily follow that, because you have doubled the number of people, you will get the answer quicker. In the field of research, to give greater magnitude to the problem would not necessarily find the answer any quicker.

MEXICAN FRUIT FLY PROBLEM

Dr. MOSEMAN. I think here the magnitude of the problem is a commodity one, in part. In other words, as I mentioned before, we have oranges and grapefruit in Texas that are affected. Lemons are not. Apparently they are too sour for the insect. We have to find out how many, of all of these fruits that are grown in California, might be infested with the insect and what are the commodity treatments, for example, that are effective for all of those different fruits. Because, if we do not find controls for the insect in one of those types

of fruit that exists in California over long seasons, where they have oranges, for example, that stay on for a long time, and cannot control the insect and cause it to go back into its Mexican quarters every year as happens in Texas, this insect presents a threat over a very wide area in the United States.

Mr. WHITTEN. It is a serious threat which makes you want the answer much worse. Now, having reached that point, what new fruit is it that you have not experimented with in the years since I first saw this work in Mexico City.

Dr. MOSEMAN. We have concentrated our efforts pretty largely on the orange and grapefruit treatments, for Texas, up to the present time. As I mentioned, we do have many additional fruits in California: mangoes and avocados for example, which are not such prominent fruits in the Texas area. They present separate problems in California. Peaches, pears, and apples are other fruit hosts in California.

Mr. WHITTEN. This means that the work will be done in California. Now it is in Texas and you need to do it in California, is that it?

Dr. MOSEMAN. It means that the largest part of the work, Mr. Chairman, is still going to be done in Mexico but with fruits that can be shipped from California down there for study. We are really anxious to get these answers just as soon as we can in order to minimize that threat of the insect coming across the border and becoming permanently established in the United States.

RESEARCH STAFF IN MEXICO CITY

Mr. WHITTEN. You have a staff of how many in Mexico City working with this problem now?

Mr. BEACH. There are 12 employees for both the fruitfly and citrus black fly, the combined project.

Mr. WHITTEN. If you get this increase, how many more people are you going to put down there?

Dr. MOSEMAN. We will put on about 10 or 12 permanent people, plus some part-time people.

Mr. WHITTEN. If we employ civil-service people, we are going to have them from now on, even if you get the answer next month.

Dr. MOSEMAN. I sincerely hope, Mr. Chairman, that if we get the answer to this in the next couple of years that we can either turn some funds back or shift onto something else that is urgent. I assure you that will be done.

DURATION OF RESEARCH PROJECT

Mr. WHITTEN. How long have you been working on this?

Dr. MOSEMAN. The Mexican fruitfly problem?

Mr. WHITTEN. How long has the Department been working on it?

Dr. MOSEMAN. Dr. Knipling might be able to answer that better than I could.

Dr. KNIPLING. I cannot give you the exact number of years.

Mr. WHITTEN. Approximately how long?

Dr. KNIPLING. I would say for 20 years.

Mr. WHITTEN. If you have had 12 people working on it for 20 years, I would like for you to explain to me what is convincing you that you

ill find the answer quicker if you put 10 more people in the same loca-
on, in the same facilities, and under the same conditions. I hope
ey will, but I am just trying to find out.

Dr. MOSEMAN. The one thing that we have today that we have not
ad in the past is many new chemical materials, potentially more
fective insecticides, lures, and baits. We have developed a lot of good
ads from our oriental fruitfly program in Hawaii regarding lures
nd baits and other background information. These leads should be
llowed up to develop practical applications if possible.

Mr. WHITTEN. I am certainly not discussing this from the stand-
oint of getting rid of the 12 men you have had working on it. I
cognize it is spreading. You need to continue. You need to make
work. But you have worked on it for 20 years. I am just trying
find out where you place your hopes that 10 more people in the
me location will contribute any more than the 12.

Dr. MOSEMAN. Perhaps Dr. Knipling has a comment here.

Dr. KNIPLING. May I point out one feature that is rather costly in
is program?

Mr. WHITTEN. I am not opposing this. I am trying to find out
giving more money and putting more people in the same working
ace, working with the same problem, is really the answer.

NEED FOR BIOCLIMATIC STUDIES

Dr. KNIPLING. There is one line of research in particular that is
extreme interest to the citrus industry. It was to the Texas
dustry before the new infestation was found in California. They
ve requested work especially on the bioclimatic cabinet investiga-
ons to try to determine in what areas in the United States this
sect might become established. By getting that information, it
ill have a bearing on what precautions or how strict any quarantine
gulations might have to be in moving commodities. We think
om a long-range viewpoint this would be a great saving to the
dustry and would guide us in developing our quarantine regulations.
his is a rather expensive undertaking. I believe that about $75,000
ill be devoted to these studies alone. That is the new approach,
ou might say, to trying to determine how important and widespread
e might expect the insect to become. Work like this was done in
awaii with the oriental fruitfly and we plan to do the same thing
ith the Mexican fruitfly.

RESEARCH TO DEVELOP IMMEDIATE METHODS FOR ERADICATION

Another reason why we think an expansion is needed: Prior to the
w infestation in California, when we had the main problem in
exas, which is somewhat localized, we were working in Mexico with
e hope of finding ways and means of reducing the overall population
nd thereby prevent or reduce the chances of spread. But in Cali-
rnia they are interested in ways of eliminating a light infestation.
here is a different approach needed. For instance, biological control
ould be of no immediate value under California conditions because
e population is not large enough to establish and maintain biological
ontrol agents, parasites and predators. So more emphasis will be

given to new insecticides, methods of using them, that might permit the eradication from California and the northwestern Mexico area.

POSSIBLE SHIFTING OF PRESENT PERSONNEL TO NEW WORK

Mr. WHITTEN. You make a very plausible argument there. I come back to the same point, however. Now, explain to me why the 12 employees you have can't do that. You have made a good argument for shifting your emphasis in view of changed conditions. Now these people have had 20 years' experience along this line. During that period doubtless they have tried a lot of things. They may not have gotten the answer, but they have proved that certain things were not the answer.

With that background of experience, why is it that those 12 men could not shift their emphasis, where they have found out what would not work, to the problem that you have discussed, in an effort to see if that is the approach.

Dr. KNIPLING. They will, actually. The men we have will continue investigations, say, on new insecticides and new lures or attractants, such as they have done. They have done work on sterilizing fruits under Texas conditions.

Mr. WHITTEN. That is very fine. I have seen some examples of that. I have seen fruits that had some of the sprays in good condition; others under similar conditions did not have it or the same selling qualities.

If you need to give emphasis to the work you are talking about and put these same 12 people—I dare say you could not find anybody with the experience they have, because nobody else in our country has worked on this problem that long—wouldn't it be better to shift them into this new effort?

Dr. KNIPLING. They really are.

Mr. WHITTEN. I am belaboring this issue trying to point out the problem which exists for all research work. There is no point in my mind of trying to take it out on the Mexican fruitfly or to minimize the dangers to fruit crops. I am just trying to dig into whether giving more money and putting more people on something is really the cure. I am trying to see if that offers any more hope or enough hope to justify the cost.

Dr. MOSEMAN. I might explain that the 12 current people we are talking about in Mexico City include only 6 professional workers. That is the entire program that we now have there on both Mexican fruitfly and citrus blackfly as Mr. Beach stated. As I mentioned before, we have shifted, Mr. Chairman, about $75,000 of added funds this year over on to this Mexican fruitfly program whereas it was about——

Mr. WHITTEN. What this amounts to is that you have shifted the emphasis over to it. So now you are asking us to underwrite what you are doing in the Mexican fruitfly. In effect we are appropriating under the title of this to replace the money you took somewhere else.

Dr. MOSEMAN. No; we would expect to carry that shift in funds as a continuing part of the Mexican fruitfly research program to give us that larger program from here on out until we get this problem solved.

In regard to the use of additional manpower we know, for example, that one man can run only so many commodity treatment tests on a given type of fruit or with a given group of chemicals. We have many different types of fruits to test in the California area. We ought to test them just as soon as we can so we get the information right away because if we don't have the information, and then insects get into some fruits we have not had an opportunity to test, we have got the threat to our whole area. That is the reason, Mr. Chairman, that we want to strengthen this program materially as soon as we can and get the answers as quick as we can to help the control people who need the information to keep the pest in check.

Mr. WHITTEN. Are there any questions on this particular item?

Passing on to your next item of increase, I wish you would discuss it along the lines that I have indicated.

COTTON INSECT RESEARCH

Dr. MOSEMAN. The second item of increase is the research on the pink bollworm and other cotton insects. We have estimates during the past 26-year period that the average annual loss of cotton destroyed by insects is estimated at about $261 million, ranging all the way from about $77 million in 1931 to about $908 million in 1950. Approximately 1 bale of cotton out of every 7 continues to be lost to insects. We have made considerable progress since 1947, when some of the new insecticides came out, in developing more effective controls but the heavy loss in 1950 occurred in spite of these improvements. Most of this loss was from the boll weevil.

The boll weevil is still the No. 1 pest insofar as total damage is concerned, but the pink bollworm is considered the No. 1 potential enemy. Prior to 1951 the pink bollworm was held pretty well in check by quarantine, regulatory, and cultural control measures, but for the past few years weather conditions have been such that these measures were not fully effective. In 1953 and 1954 we had some further pink bollworm infestations and they have moved farther north into areas of Texas where we cannot use, as effectively, the fall sanitation, stalk destruction practices that we can in south Texas. This increases the hazard of the pink bollworm overwintering in that area and providing a potential threat to areas further eastward.

The research on this insect has been expanded during the past 2 years but there is still need to develop better methods of killing pink bollworm, both in the field and at the gin, and to strengthen basic studies on the biology of the insect and environmental limitations of the pink bollworm.

Dr. Knipling mentioned the bioclimatic cabinets. They are cabinets in which we can control very carefully the temperature, humidity and other environmental conditions. We can simulate, for example, the environment that exists at a given location in the Cotton Belt. We can grow the insect on cotton in those cabinets to determine whether or not it is able to withstand the conditions in that particular environment. These studies will help us to determine just where that potential spread is going to be so that we can be guided in both our quarantine or control practices and in our research work.

The bollworms are causing far more damage to cotton today than they did a few years ago partly because of the increased acreages of

other hosts such as legumes, corn, soybeans, and other crops that are grown in the area, and also in part because many of the new organic insecticides kill off the predators and the natural enemies of the bollworm that used to hold this insect in check.

The use of organic insecticides in some areas, to control the early-season insects, has shown that thrips and other early-season pests cause much greater injury to seedling cotton than we formerly recognized. We must concentrate more effort to develop better and more economical insecticides and to determine the best timing and the methods for early-season application. One of the things we hope to do is to concentrate more effort on this systemic insecticide approach which looks very promising for a number of those early-season insects.

The work we would propose under this increase would include strengthening the pink bollworm research with particular emphasis on basic research on physiology, toxicology, biochemistry, and the use of bioclimatic cabinets in studying the response of the insect to various climatic conditions. We also would investigate utilizing disease organisms or predators for natural control of the pink bollworm. We would expand the research on control of insects attacking cotton in the seedling stage with particular emphasis on thrips, overwintering bollworms, aphids and spider mites and other insects which cause early-season decimation of the cotton plants.

We would expand the boll-weevil research particularly in the Eastern States where it has been causing the greatest damage in recent years.

The additional support would provide for research on control of the bollworm which is an acute problem throughout the Cotton Belt and which has been intensified in recent years with insecticides used for the control of the boll weevil, lygus bugs, and stink bugs, that also kill natural enemies of the boll worm.

STATE SUPPORT OF COTTON INSECT RESEARCH WORK

Mr. WHITTEN. Dr. Moseman, I come from an area where we are thoroughly familiar with the problems of cotton and problems from cotton insects. Luckily we have not had the pink bollworm. I came from an area where many, many people speak to me repeatedly about the need for research in connection with the pink bollworm. Actually, in this program the States put up a considerable amount of money, do they not?

Dr. MOSEMAN. Yes; they do.

Mr. WHITTEN. What is that total?

Dr. MOSEMAN. On the pink boll program the States have contributed sizable sums. Texas is putting in $32,000; Mississippi, $25,000; Georgia, $15,000; Arkansas, $15,000; Alabama, $15,000; and Louisiana, $5,000.

Mr. WHITTEN. I believe the private sources have contributed, too, have they not?

Dr. MOSEMAN. That is right. The Oscar Johnson Foundation and Cotton Council have put in $35,000 for this program.

NUMBER OF RESEARCH WORKERS REQUIRED ON PROJECT

Mr. WHITTEN. I reach the same question I raised with regard to the others. How many people do you have working on this now, how long have they worked, how many additional people will you put on this, and what reason is there to believe that more people will reach the answers any quicker?

Dr. MOSEMAN. I do not have the present number of staff members by location for the different lines of work.

Mr. WHITTEN. You can correct the record. I just want an approximation.

Dr. MOSEMAN. Again, it is a case where as far as the overall problem is concerned, Mr. Chairman, we realize that what we have done so far is not adequate in preventing the losses farmers face from cotton insects. We have tried our best to reorient our research program to use the most effective insecticide materials, the most effective cultural practices and so on, in developing these controls. Again, we come to the point that with additional staff members, we are going to be able to step up the number of tests that we can conduct. We can study more of the different chemical materials for possible use as insecticides and we hope that we can come up with answers to these problems.

Mr. WHITTEN. At what stations have you had people, what kind of tests have they been running, how long have they been there? If you get this money, what new people are you going to put on and where are you going to put them? You have made so many tests; some of them helped, some of them did not. I am trying to get you to show what is contemplated and to explain why more money means quicker answers.

Dr. MOSEMAN. Our increased program would provide about $23,000 for boll weevil research and that would be divided at three different locations. There would be $8,000 each at Mississippi and South Carolina, and $7,000 at Texas.

Mr. WHITTEN. Does that mean that you put one additional person in each of those areas?

Dr. MOSEMAN. That is correct. That would mean about one additional professional person at each of those locations.

Mr. WHITTEN. How many do you have there now?

Dr. MOSEMAN. I don't have the breakdown of present staff by location.

Mr. WHITTEN. I would like for the record to show it.

Dr. MOSEMAN. All right.

(The following statement was submitted later.)

Program	1955 fiscal year			Increase, 1956 fiscal year		
	Funds	Man-years		Increase, 1956	Man-years	
		Professional	Nonprofessional		Professional	Nonprofessional
BOLL WEEVIL RESEARCH						
Florence, S. C.	$10,321	1.0	1.0	$7,360	1.0	
Stoneville, Miss.	11,250	1.0	.5	7,360	1.0	
Gulfport, Miss.[1]	2,849		.6			
Tallulah, La.	17,000	1.5	1.0			
College Station, Tex.	6,500	1.0				
Waco, Tex.	9,000	1.0	.3	6,440	1.0	
Beltsville, Md., and Washington, D. C.[2]	12,180	.5	1.9	1,840		
Project total	69,100	6.0	5.3	23,000	3.0	
BOLLWORM RESEARCH						
Florence, S. C.	5,800	.5	.5	2,760		1.
Stoneville, Miss.	5,260		1.0	2,760		1.
Gulfport, Miss.[1]	1,430		.3			
Tallulah, La.	2,000		.5			
College Station, Tex.	2,000		.3			
Waco, Tex.	9,000	1.0	.2	2,760		1.
Tucson, Ariz.	3,250		1.0	2,760		1.
Beltsville, Md., and Washington, D. C.[2]	6,160	.2	1.0	960		
Project total	34,900	1.7	4.8	12,000		4.
PINK BOLLWORM RESEARCH						
College Station, Tex.	10,000	1.0	.5			
Waco, Tex.	5,000		1.0	8,000	1.0	
Brownsville, Tex. (and sublaboratories)	133,440	14.5	7.0	19,600	2.0	1.
Gulfport, Miss.[1]	7,870		1.9			
Beltsville, Md., and Washington, D. C.[2]	33,390	1.2	4.5	2,400		
Project total	189,700	16.7	14.9	30,000	3.0	1.
ALL OTHER						
Florence, S. C.	4,900	.5	.5			
Stoneville, Miss.	10,568	1.0	.5			
Gulfport, Miss.[1]	4,237	1.0				
Tallulah, La.	13,556	1.5	.5			
College Station, Tex.	21,600	3.0	2.0			
Waco, Tex.	11,086	1.0	.5			
Tucson, Ariz.	19,383	2.0	1.0	4,600		1.
Brownsville, Tex.				4,600		1.
Beltsville, Md., and Washington, D. C.[2]	18,270	.7	3.0	800		
Project total	103,600	10.7	8.0	10,000		2.
Total, all projects	397,300	35.1	33.0	75,000	6.0	7.

[1] Field business office.
[2] Program supervision, coordination, and general administrative services.

Dr. MOSEMAN. On the bollworm work we are strengthening the supporting funds. No new technical staff at all at a number of locations, South Carolina, Mississippi, Texas, and Arizona.

Mr. WHITTEN. When you say strengthening them, you don't hire more people but you spend more money? How do you spend it?

Dr. MOSEMAN. We find that our present scientific staff is handicapped because they don't have adequate funds to buy supplies, materials, and to hire labor that they need to carry on the work. We expect to use these funds to strengthen their work in that way. In other words, make more effective the technical competence on the job already. The pink bollworm work would be concentrated at Brownsville, Tex., where we have the laboratory which I believe you folks have visited.

Mr. WHITTEN. Are there any questions on that particular item? You might pass to the next item of increase, and I wish you would go through it the same way. It is $50,000 for the resistance of insects to insecticides. What will you do for $50,000 extra that you don't do now?

Dr. MOSEMAN. The $50,000 for resistance of insects to insecticides is in addition to a base amount of about $100,000 we have at the present time.

The number of insects which are developing resistance or imumnity to the new insecticides is increasing each year. During 1953–54, DDT-resistant strains of the Colorado potato beetle, cabbage looper, imported cabbageworm, grape leafhopper, lygus bugs, and potato flea beetles have been reported. There are indications that the codling moth might also be resistant to DDT in some areas. Various species of spider mites on ornamentals, fruits, and certain other crops have developed resistance to parathion, one of the phosphorous compounds that up to now has been very effective. Certain plant lice, including the green peach aphid and walnut aphid have become resistant to DDT and parathion. This is particularly damaging in areas where we have heavy fruit and vegetable production. The green peach aphid is one of the vectors of virus diseases of potatoes in certain areas of Washington and Oregon.

Bean beetles in North Carolina show resistance to rotenone. The problem of resistance to various insecticides among insects affecting man and animals and household pests has also become more acute. I think you are familiar with the development of resistance on the part of houseflies to DDT.

When a major pest develops immunity to an insecticide widely used for its control, serious damage to crops results before alternate materials can be found and applied. Business interests lose heavily because of the large investment in the development, manufacture, and distribution of insecticides. Also, those insects resistant to DDT usually resist all of the chlorinated hydrocarbons or that same family of chemicals so we must go to an entirely different family of compounds in order to get effective insecticides.

We plan with the added funds to conduct basic research to determine why certain insects have the capacity to become resistant, in order to obtain information that will serve as a guide in the development of more effective insecticides in the future. Research on various crop pests and insects affecting livestock and man must be strengthened in efforts to anticipate resistance and to explore substitute control methods as soon as possible after it is shown that resistance to present insecticides has developed.

Now, Mr. Chairman, you inquired about our present work, our present breakdown. We are studying, in our fruit insect section, the tendency of DDT resistance of the codling moth and parathion resistance in mites. We are carrying on these studies primarily at Yakima, Wash., also at Vincennes, Ind.

In our truck and garden insect section we are studying resistance of cabbage loopers, certain aphids, the Mexican bean beetle, and some mites. In our cotton insect work we are concerned because of the failure of materials like benzene hexachloride and toxaphene to control

cotton insects. We have conducted some studies on red spiders. Also the failure of boll weevil control at certain times with our present materials.

Mr. WHITTEN. Doctor, I have always believed in research and there is no change in my viewpoint now. The statements that you have just made certainly would be convincing to this committee as to the need for research in this field. As I have tried to state, the record shows that we do believe in it, because about $35 million is being appropriated for the Agricultural Research Service for research.

I, therefore, would like for you to direct your attention to whether the additional money and the people hired by it, will contribute any more.

These advisory committees are aware of the problem. They come to you and want answers. When 20 of them want answers, that request is doubtless counted by you in setting up your desired budget. You take it to the Department of Agriculture and they take it to the Bureau of the Budget.

This request for the answers is used to get the sum of money that the Bureau of the Budget may approve. The point I am trying to bring out is why it cannot be done with the existing force and why hiring more people will contribute anything beyond what you can do with your existing force.

I am not prejudging your case and I am not saying you can't make a good case, but I say this is the place to make it and I am asking for it.

Dr. MOSEMAN. The projects I mentioned fall into a number of different fields, Mr. Chairman. Fruit insects, truck and garden crop insects, and so on. Our scientists working on those particular problems are trying to develop the most effective and economical types of insect-control measures that we can, for farmers to use. That involves a very detailed study of numerous chemicals as insecticides, not only to determine whether they are effective in controlling insects, but also the effects of such compounds on warm-blooded animals, including man, or on animals that may be feeding on the residues of those crops. There is only about so much that a single man can do in carrying out such research. While we have given such attention as we could to this problem of insects developing resistance to compounds, we have only been able to touch on it in an incidental way. It is limited largely to observations that our men make as they carry out their primary research work to develop more economical control measures for the various insect pests.

The question that we face is: Should we continue to go through the process of developing new materials, have insects become resistant to them, and then go back and try to find something else that will be effective, and continue through that more or less trial-and-error process? Or, should not we try to develop some basic information as to why this happens. What is there in the physiology of the insect that enables it to become tolerant to the poisons? Are there certain compounds that may have a capacity for killing insects that are more durable and dependable through the years? That is the type of thing we are shooting for here.

Mr. WHITTEN. This insect resistance—have you had any project on that? Do you have any money this year set aside for that purpose?

Dr. MOSEMAN. It has been limited largely to the observations by our scientists who are studying insecticides to develop practical

controls for different insect pests. They observe, for example, that it takes considerably more material to control the same insect this year than it took 5 years ago. That, of course, presents a residue hazard in some cases. We have some projects in our Insecticide Section where we are devoting some specific attention to this problem of physiology of the insect.

PERSONNEL AND LOCATION FOR INSECTICIDE RESISTANCE RESEARCH

Mr. WHITTEN. How many people would be employed with this increase?

Dr. MOSEMAN. The total number of people we would have on a full-time basis would be eight after the first year, after we had our equipment and major supply items taken care of.

Mr. WHITTEN. Where do you plan to do this work?

Dr. MOSEMAN. The work would be done in part at Beltsville. For the basic studies on insect physiology, that is the ability of the insect to develop resistance, $18,000 of the funds would go under that program. We are going to strengthen our studies on screening of chemicals or evaluation of chemicals as insecticides, concentrating that work at the laboratory at Brownsville, Tex. We would put $7,000 on that. We are going to concentrate some efforts on the vegetable and berry insects, putting $5,000 in Washington and $5,000 in South Carolina. We are going to study the pome fruit insects and their resistance to DDT and such materials in Washington. We are going to give some attention to flies that affect man and livestock and household insects with $5,000 each at Kerrville, Tex., and at Orlando, Fla.

Mr. WHITTEN. Didn't we give you $175,000 extra last year for this work?

Dr. MOSEMAN. There was no additional money provided for this work last year. I think the problem was discussed with this committee about 2 years ago, Mr. Chairman.

Mr. WHITTEN. Wasn't there some additional money for this general line?

Dr. KNIPLING. We received an increase of $84,000 last year for research on insecticide residues.

May I comment on this $100,000 base that we mention here? This resistance problem has only become acute in the last few years. We have not had any direct appropriations for problems of this kind. The $100,000 represents shifts in emphasis from our going projects to try to meet the resistance problem. Se we have shifted already to the extent of $100,000 in the last 4 or 5 years to try to meet insofar as we can this problem.

Mr. ANDERSEN. In that connection, Mr. Chairman, aren't there, on the other hand, Dr. Knipling, certain projects which you can virtually discontinue and thus utilize money which was formerly allocated along that particular kind of work for this new need?

Dr. KNIPLING. Yes, sir. There are. We do make shifts. These are by no means the only shifts we have had made in investigating new problems that arise.

Mr. ANDERSEN. It seems to me, Dr. Shaw, you mentioned the other day that about 20 percent of your projects go out of being each year.

Dr. SHAW. In a specific field of investigation, when we get the answers needed on a given line of work, our normal practice is to

review the remaining problems in the same field of work and take up another promising line of research that is urgently needed.

Mr. ANDERSEN. Would not that give you quite a considerable sum of money to utilize elsewhere on these other things as they come up that might appear to be urgent?

Dr. SHAW. It would if we had adequate solutions to the overall problems, but the situation we are up against is that we don't have adequate solutions to many of the complex problems facing farmers, and we are continually confronted with carrying on research in the same areas or problem fields.

Dr. KNIPLING. New problems come up constantly, new threats. In the case of insects we have not worked on previously, that cause field losses, we undertake investigations whenever we can.

Mr. WHITTEN. There is a reason why we ask so many questions and why they are very much worthwhile. You pick out a project and sell it to the press and sell it to Mr. Andersen and me. But we already have $35 million for research. So, the point is that for projects that require special attention we need to give every effort to show the need for it. Also we need to consider whether we can't get by and do the job without extra money under present conditions. Therefore, we have tried our best to reach both of these things in these hearings.

We will proceed now to the next item.

FARM AND LAND MANAGEMENT RESEARCH

Mr. WHITTEN. We are pleased to have Dr. Sherman Johnson with us. He is responsible for farm and land management research and the various research activities under that heading.

Dr. Johnson, you have over $3 million for 1955. You tell the committee that is not enough. It takes more money for research in that field. That leaves the question of what you are doing with the money you now have. It leaves you then with the problem of convincing us that you can't take that same money and do the new problems that have shown up. We will be glad to hear from you.

Dr. JOHNSON. This farm and land management research consists of 3 activities, organized in 3 branches. The first activity listed is soil and water conservation research.

Let me say first of all that I am sorry that Dr. Salter, who heads that Branch could not be with us this afternoon. He has had some health difficulties. He is getting better but didn't feel that he was quite equal to the task.

Mr. Pate, as Dr. Salter's immediate assistant is with us, and also Dr. Ackermann who heads the Watershed Hydrology Section in that Branch.

Mr. WHITTEN. We, too, are sorry he is not here. We hold Dr. Salter in very high regard. We have found that he is quite an effective man in his field and mighty convincing across the table.

Dr. JOHNSON. He is very effective and very sincere.

Mr. WHITTEN. I know that.

Dr. JOHNSON. The second activity is agricultural engineering research. Dr. McKibben heads that work and he is with us at the table. And then production economics research, Mr. Heisig heads that Branch.

I should like to say just a word before I start on the Soil and Water Conservation Branch—these three activities, all of them, frequently deal with the farm as a unit.

They cut across the commodity lines in crops and livestock, but they undergird and tie together the research in other fields.

For example, the farmers cannot grow crops without paying attention to the soil and, of course, they need efficient, up-to-date equipment, and they need information on costs and returns that they can expect, which brings in the economic aspects.

Nearly all of this research is done in cooperation with the land-grant colleges. The Department and State people work hand in hand. The Department people tie together the results from the different locations, to provide answers on a regional and national basis. And, of course, the land-grant college cooperation means that the results flow into vocational agriculture, and the extension program, which now is emphasizing the farm and home development work. This research provides background for that.

We also work closely with the action agencies of the Department and provide information for use in operations programs. We have developed an especially close relationship with the Soil Conservation Service. As you know, Dr. Salter was formerly in charge of the Soil Conservation Work, and he and Mr. Williams arranged a liaison relationship. A representative in each region, that is in each part of the country, works with the State experiment stations, with the soil conservation operations people, and with our own research staff, to bring together the conservation research needs, in order to point out the important research gaps that need to be filled.

SOIL AND WATER CONSERVATION RESEARCH

I think we all recognize that protection and improvement of the Nation's soil and water resources is vital to sustained, efficient production. The programs in this field are dependent on adequate research for improved methods of doing the job. In the Soil and Water Conservation Branch, the research activities are along the following lines:

First, improved soil and water management practices; second, irrigation and drainage; third, reduction of salinity problems; and fourth, fertilizer and liming materials; that is research on them.

Fifth, relation of soils to plant, animal, and human nutrition, and sixth, watershed hydrology.

SOIL AND WATER MANAGEMENT RESEARCH

Now may I say a word about the first item. The Soil and Water Management Research is concerned with protection and improvement of the soil and water resources, including erosion control, water conservation, cropping systems, irrigation, drainage, use of fertilizer, and other factors affecting protection and improvement of the soil.

Mr. WHITTEN. Dr. Johnson, let us briefly review this, now. We have a deep interest in that work.

How is this money handled for that item? Where does it go from the Department? Are these employees your employees?

Dr. JOHNSON. Employees paid from these funds, include personnel employed full time by the Agricultural Research Service—that is, by this Branch, and also some employees that are employed cooperatively with the land-grant colleges.

Mr. WHITTEN. Now where are they assigned for work, outside of your small staff here in Washington? Are they at the various land-grant colleges?

Dr. JOHNSON. Some are at the land-grant colleges and some at field stations. Most of them are at land grant colleges. For example, the work in the humid regions consisting of the 31 Eastern States in soil and water conservation management research is conducted at 24 locations, in 20 different States and Puerto Rico.

Mr. WHITTEN. It is a land-grant college program?

Dr. JOHNSON. It is a cooperative program.

Mr. WHITTEN. Is there a memorandum of agreement between you and the colleges?

Dr. JOHNSON. A memorandum of understanding.

RELATION OF SOILS RESEARCH TO SOIL CONSERVATION SERVICE

Mr. WHITTEN. Is that involved in the reorganization of the Department? Formerly this work was done by employees under the direction of the Department, a considerable part of it by Soil Conservation. Under the reorganization, you do it by this contract or memorandum of agreement with the land-grant colleges.

Dr. JOHNSON. A small part of this work was transferred from the Soil Conservation Service upon the reorganization of the Department a year ago. A larger phase of it was transferred the year previously to what was then the Agricultural Research Administration.

However, the work that was formerly in the Soil Conservation Service was conducted cooperatively with the land-grant colleges as it is at the present time. Nearly all of it was cooperative with the land-grant colleges when it was in the Soil Conservation Service.

Mr. WHITTEN. At that time, however, the funds were made available to the Soil Conservation Service, which in turn worked out its own memorandum agreement as to what it needed.

Dr. JOHNSON. Yes.

Mr. WHITTEN. That is particularly true with regard to the flood prevention and watershed programs.

Now, the Agricultural Research Service handles that and you work out the memorandum of agreement. So the Soil Conservation Service has been taken out of the control of the research that it might wish for its own operations, is that right?

Dr. JOHNSON. I would say not. That is the reason this liaison relationship was developed.

Mr. WHITTEN. I want to know what the facts are, Doctor.

Dr. JOHNSON. The facts are these: In the reorganization, the remaining research work in the Soil Conservation Service was transferred to the Agricultural Research Service.

Mr. WHITTEN. That is right.

Dr. JOHNSON. Now more generally, the reorganization concentrated research in the Agricultural Research Service, with the exception of the marketing research in the Agricultural Marketing Service and forestry research in the Forest Service.

Now then, we worked very closely with the Soil Conservation Service in transferring the research formerly in that Agency. We established the liaison relationship so that they would have a channel, a current channel open all of the time, to keep us informed on their research gaps and their need for research information.

Mr. WHITTEN. If they convince you of their needs, you in turn might get the land-grant colleges to enter into an agreement to do the work.

Now, the Soil Conservation Service, which is out there doing actual work on these watersheds—two of them are in my own district—no longer can contract with the land-grant colleges for the research to meet their needs. But they must come to you and spell out what they need. And you go over it and see what they need or what you want to use the money for. And if they convince your group, you deal with the land-grant colleges. We have a middleman, in between, who is doing the job of soil conservation and the research which is needed for that work; haven't we?

Dr. SHAW. May I say a word on this?

Mr. WHITTEN. We would be glad to have you.

Dr. SHAW. In the first place, before these transfers were made, you will recall we had 2 soils programs; 1 in the Agricultural Research Administration, and 1 in the Soil Conservation Service. We felt—the Department felt, and certainly I shared that view, and so did the people in the Soil Conservation Service—that we could make a better soils-research program by integrating the 2 efforts into 1.

Now in doing that, those of us in the Agricultural Research Service had to assume the responsibility of serving the needs of the Soil Conservation Service. In terms of determining research needs, State by State, for the Soil Conservation Service, we have a committee made up of our people, the land-grant college people, and the SCS operations people. The State Conservationist of SCS operations is chairman of that committee. He brings to the committee's attention the kind of a program that they in SCS want and need. We are, to the extent of our possibilities, directing our whole program to serving their needs.

INTEGRATION OF SOILS RESEARCH PROGRAM

Mr. WHITTEN. Much of the work doesn't meet the need. They have reduced some of the research that formerly went on. I have been turning over in my mind whether or not it might be sound to take the funds appropriated for soil conservation research, and make the appropriations to the Soil Conservation Service. Then it becomes their money. They would be back to where it would be used for the things that they might need. Would that work?

Dr. SHAW. The one important thing I think is to keep this soil research program together.

As far as I am concerned, as long as it is kept together I don't care whether it is in the Soil Conservation Service or in the Agricultural Research Service. I do think it is important that we have one program.

Mr. WHITTEN. If we were to say that so much of the money is set aside for Soil Conservation Service work, that wouldn't necessarily mean that you couldn't have some over-all look at it. But you couldn't

use the money that we provided for research in connection with these 11 watersheds and divert it to some other type of operation.

Dr. SHAW. There is a close relationship between what the Soil Conservation Service is going to need and the total needs in soils. I still think it ought to be kept together and kept in one budget. We had a lot of problems before when we had two programs.

Mr. WHITTEN. But we had lots of work in this field in my area that we don't now have.

Dr. SHAW. I don't know what.

Dr. JOHNSON. I think actually there have been some increases.

Mr. WHITTEN. You eliminated that work at 1 or 2 points in my area.

Dr. SHAW. I am not aware of it. Did you know of it Mr. Pate?

Mr. PATE. I don't recall that there was a decrease.

Mr. WHITTEN. I wish you would check it. We have this watershed and flood prevention program across the country, and as a part of that we have these 11 watersheds which have been in existence for many, many, years. And in the actual work of trying to meet the directives in connection with these 11 watersheds, it calls for a very specific type of study, and findings have to do with work projects they are trying to have built. Under the present arrangement, however, they have that specific type of need farmed out, so to speak. I may be in error, but I think a considerable part of the work has been moved away from the immediate problems on the projects.

Dr. JOHNSON. Mr. Chairman, we will be glad to check it and supply a statement for the record. That might be a Soil Conservation operations activity.

(The information requested follows:)

Under Memorandum No. 1318 signed by Secretary Brannan on October 14, 1952, all research in soil and crop management and water management on farms related to crop production in the Soil Conservation Service was transferred to and integrated with the research in this field in the former Agricultural Research Administration. At the same time all soil survey activities of the Bureau of Plant Industry, Soils, and Agricultural Engineering were transferred to the Soil Conservation Service and integrated with the survey activities of that Agency. These transfers were based on a joint recommendation by the Chief of the Soil Conservation Service and the Administrator of the Agricultural Research Administration. They were made to permit development of stronger, better integrated programs in the fields of both soil survey and research.

In the November 2, 1953, reorganization of the Department, the research dealing with hydrology, the engineering phases of drainage and irrigation, and the economics of conservation, was transferred to the Agricultural Research Service and integrated with closely related research. Here again the objective was to provide a better integrated and thus a stronger research program.

Prior to the reorganization, research of both agencies was conducted, for the most part, in cooperation with State experiment stations and the State or local agencies under memoranda of understanding or cooperative agreements. No work was contracted to these agencies. The pattern of research and cooperation has continued substantially unchanged, with only those changes in research required to keep it in adjustment with current needs. None of the cooperative memoranda in force prior to the reorganization have been abrogated, and no work has been contracted.

Except for a shift of supervisory personnel in irrigation and drainage for the western region from Utah to Colorado, relatively few permanent personnel have been moved. There has been no shift or release of personnel incident to the reorganization in Mississippi or adjacent States. In fact, an additional soils specialist is now employed in Mississippi.

In order to provide better service to the operations program of Soil Conservation Service, several activities have been undertaken including the following:

(*a*) A comprehensive State-by-State survey of research needs, as already mentioned. Reports for individual States and a national summary report were

submitted by the Administrator of Soil Conservation Service to the Administrator of Agricultural Research Service. These reports serve as a guide in the adjustment of present program and planning of new research.

(b) Soil Conservation Service State conservationists or appropriate staff members have participated actively in State research planning conferences with Agricultural Research Service and State research personnel.

(c) Research consultation and assistance to Soil Conservation Service field personnel on specific problems has continued on the same basis as prior to the reorganization.

(d) In several instances, research personnel have attended regional conferences of State conservationists and have participated in training schools for Soil Conservation Service personnel.

(e) In a conference, January 27–28, 1955, at Denver, Colo., on progress and problems in irrigation and drainage, research project leaders met with specialists from engineering and watershed planning units of the Soil Conservation Service in Western States and the Washington office. This conference achieved closer understanding between the representatives of Agricultural Research Service and Soil Conservation Service in their respective fields.

(f) In order to expedite the prompt availability of research information to the Soil Conservation Service field program, the Soil and Water Conservation Research Branch of Agricultural Research Service prepares quarterly reports of progress which are distributed by the Soil Conservation Service to all field locations. In addition, annual reports of research are distributed to State conservationists.

FEDERAL SOILS PROGRAM AND LAND-GRANT COLLEGES

Mr. WHITTEN. I have also been a strong believer in the land-grant-college system and the Extension Service. But quite definitely in the last 2 years, these budgets have clearly shown that somebody, somewhere, has been cutting down on all action programs in favor of research and extension work. Now we did help in this committee in getting the ceiling lifted on extension work—in fact we promoted that and had the first bill prepared—but in our doing that in support of the land-grant-college system, it was never our intention to be a party to trying to kill the Conservation Service, the ACP program and those other action programs.

I am familiar with the fact that the Extension Service and the land-grant colleges are not under the Department of Agriculture. In fact none of them want to be under it. That being true, they operate with the Government under a memorandum agreement. So for soil engineering and research in connection with soil engineering, it is highly questionable as to whether it is sound to farm that out to somebody on a memorandum agreement, when a big part of it is work which the Soil Conservation Service needs.

Now that is the atmosphere in which this comes up.

I voted against giving the Secretary of Agriculture the right to reorganize the Department of Agriculture. I am very fond of Mr. Benson, and as far as I am know he is as good a man as any to have that authority. But it gave the authority to the Secretary of Agriculture, whoever he may be from here on.

Now there is some way for us to enter into that picture, and that is to rewrite the agricultural appropriation bill and put the money where it was before. I mention it now because I want you, if you have sound reasoning as to why this thing is all right and isn't an effort to take it away from these actions programs, to make your case here.

LOCATION OF FEDERAL SOILS RESEARCH

Dr. SHAW. In terms of the money that is here in this budget, that is spent by us and is under our control. There is no question about that. This is not under the control of the land-grant colleges. We have full control of all of this money and it is either going to be spent for full-time employees of ours or——

Mr. WHITTEN. You put it at the land-grant colleges and they will get the checks from Washington, or from the Department of Agriculture.

Dr. SHAW. We have part of them located at the land-grant colleges, a large part of them, and some at our field stations. I don't think there are any more at the land-grant colleges now than when the research was in the Soil Conservation Service.

Mr. WHITTEN. The Soil Conservation Service, and Association of the Soil Conservation Districts quite definitely figured you were making them dependent on the land-grant colleges. The work is under the action programs and we have definitely increased that responsibility under this flood-prevention and watershed-protection work.

How can we put watershed hydrology back where it was?

Dr. SHAW. There is a specific item for that work in the budget.

Mr. WHITTEN. If that was put back and appropriated to the Soil Conservation Service, they could work it out.

RELATION OF SOILS RESEARCH TO SOIL CONSERVATION SERVICE

Dr. SHAW. Our whole intention in that program is to serve the Soil Conservation Service.

Mr. WHITTEN. I have never had any occasion to question your honesty or integrity, or very often even your information. Sometimes I didn't understand it well enough to know whether I differed with you, or not, and I don't now but there are so many other things that have happened to action programs in the budget last year and this year, that I'm of a suspicious mind in this field.

REVIEW OF REORGANIZATION OF SOILS RESEARCH IN THE DEPARTMENT

Mr. MARSHALL. Dr. Shaw, did I understand sometime ago the Soil Conservation Service carried on research work in conservation under their own department? That at that time they felt they needed to contract for some services in the land-grant colleges they went directly to the land-grant colleges and contracted for those?

Dr. SHAW. There was a cooperative agreement developed with the land-grant college and the Soil Conservation Service located their man there along with the land-grant college people.

Mr. MARSHALL. Who made that arrangement? Was that made by the Soil Conservation Service in Washington, or made by the State?

Dr. SHAW. It was made by the Soil Conservation Service in Washington. Dr. Nichols who was in charge of research would have worked out a memorandum of understanding on it with the land-grant colleges.

Mr. MARSHALL. Am I correct in saying that some time ago you and Dr. Salter discussed the situation and that you felt it would be more proper for that conservation work to be contracted through the re-

search group in the land-grant colleges, rather than them doing it, or entering into this memorandum of understanding?

Dr. SHAW. What I meant to say was this, that at the time the Soil Conservation Service had a research program of their own, we had a research program in the Agricultural Research Administration of almost equal magnitude.

Mr. WHITTEN. Now, let's get the record straight, if you will pardon me for interrupting: There was practically no duplication in that. In one-half of the United States, one service had it, and in the other half the other service had it. That's about the fact.

Dr. SHAW. A greater percentage of the soil-conservation program was concentrated in the eastern part of the United States and the Agricultural Research Administration's program was largely concentrated in the western part. Another difference between them was that the Soil Conservation Service was working primarily on factors affecting erosion, runoff and wind erosion and so forth, and we were working primarily on soil-fertility programs. We did try to keep sharp lines and prevent duplication to the best of our ability, but we feel that in connection with individual experimentation— let's take a specific example: In the Soil Conservation Service research program in South Carolina, working on conserving water, they were effecting a considerable conservation of water with the practice they were using, but they weren't inproving crop yields. Essentially the reason they weren't increasing crop yields was because they were not conducting fertility experiments to determine how much extra fertilizer was needed along with the extra water, to get benefit in crop yields; We felt if we could consolidate in those experiments both of our functions we could give better service to the Soil Conservation Service.

Mr. WHITTEN. It is in this watershed and flood-prevention work where you have people right there on the job and where you used to have research stations, as I understand it, under the Soil Conservation Service. The work was being done right on the spot, as I understood it, in my area.

Now, to have such things done away with and get them secondhand from somebody who doesn't have any contact with the particular problem that raises a particularly difficult question.

Dr. JOHNSON. Actually, Mr. Chairman, essentially the same people are working today as were working under the Soil Conservation Service when they had responsibility for the program.

Dr. SHAW. In the same location.

Dr. JOHNSON. And in the same location.

REDUCTIONS IN WATERSHED HYDROLOGY RESEARCH PROGRAM

Now, there has, over the years—I expected to get into that a little later—there has been quite a little reduction in the watershed hydrology research, but it happened before the transfer was made. Some of those stations have been closed out, Mr. Chairman. That is quite true and we are quite concerned about that and the Soil Conservation Service is concerned about it.

Mr. WHITTEN. Give us a list of those, particularly with regard to this hydrology.

Dr. JOHNSON. Dr. Ackermann, can you show the map?

Perhaps we can take care of that right now, Mr. Chairman, if you would like to.

Mr. WHITTEN. Very well, if you can.

Dr. JOHNSON. The black squares on this map show the locations where the watershed hydrology research is going on at the present time.

Dr. JOHNSON. The red dots are locations where the work was started in the middle thirties and a little bit later—I think in 1937, some of them—they ran for 3 or 4 or 5 years and were discontinued because of lack of funds. With costs increasing, and some attrition in the research program those locations were discontinued, but these black squares show the locations that were active when the work was taken over by the Agricultural Research Service. They are still active.

We have an item of increase for this work. It is the only item of increase in the Soil and Water Conservation Branch, for summarizing and making available for the Soil Conservation Service, all of the material that has been collected both from the discontinued stations and the active stations so as to make it available as quickly as possible, for use of the Soil Conservation Service in the watershed protection program and in their other work.

Now, we certainly feel that the remaining locations are not adequate to do the job that needs to be done in research, as background for the watershed-protection program. Certainly we ought to have locations in other parts of the country, but that was the situation when the work was transferred and that is the situation today.

Mr. WHITTEN. When did you close those stations and move them to these new locations?

Dr. JOHNSON. Dr. Ackermann, were not most of them closed during the war and immediately following?

Dr. ACKERMANN. I would say half were closed in 1942 or 1943, and the other half in the 1947 period when there was a substantial reduction in research funds.

Mr. WHITTEN. We will insert the list of projects in the record at this point.

(The following table presents the data shown by the map mentioned above:)

LOCATIONS OF WATERSHED HYDROLOGY PROJECTS

LOCATIONS OPERATING [1]

(Shown as black squares on the map shown to the committee)

Florida: Fort Lauderdale
Maryland: College Park
Michigan: East Lansing
Nebraska: Hastings
New Mexico: Albuquerque
Ohio: Coshocton
Texas: Riesel (Waco)
Virginia: Blacksburg
Wisconsin: Madison

[1] In some instances work in outlying watersheds is supervised from the locations listed.

LOCATIONS WHICH HAVE BEEN CLOSED BUT DATA NOT ANALYZED

(Shown as red dots on the map shown to the committee)

Arizona: Safford
Arkansas: Bentonville
California:
  Santa Paula
  Watsonville
Colorado: Colorado Springs
Georgia:
  Americus
  Watkinsville
Idaho: Emmett
Illinois: Elmwood
Indiana: Lafayette
Iowa:
  Clarinda
  Iowa City
Kansas: Hays
Missouri:
  Bethany
  McCredie
New Mexico:
  Albuquerque
  Mexican Springs
  Santa Fe
New York: Ithaca
North Carolina: Statesville
Ohio:
  Hamilton
  Zanesville
Oklahoma:
  Cherokee
  Guthrie
  Muskogee
Oregon: Newberg
Texas:
  Garland
  Spur
  Tyler
  Vega
Washington: Pullman
Wisconsin: LaCrosse

Mr. WHITTEN. Dr. Johnson, you might proceed.

EXAMPLES OF SOIL AND WATER MANAGEMENT RESEARCH

Dr. JOHNSON. All right, Mr. Chairman.

First of all, then, just an example of some of the work that has been underway and the results of the work on soil and water management in the humid regions where I mentioned a little while ago we have work underway at 24 locations.

One example is grass based rotation research at Watkinsville, Ga. That is one of the stations originally established by the Soil Conservation Service and operated as a Federal station. The workers cooperate with the University of Georgia, but it is a Federal station.

There has been considerable interest—a great deal of growing interest—in grass based rotations in the Southeast, for conservation and for livestock feed. They have tested a 4-year rotation consisting of oats 1 year, 2 years of fescue-alfalfa—that is a combination of fescue and alfalfa—and the fourth year cotton.

The 5-year average yield for the years 1949–53 was as follows:

Oats, 59 bushels; hay, the first year, 3.1 tons; the second year, 3.7 tons; and seed cotton, 1,277 pounds.

That compares with continuous cotton, which is the prevailing practice on a good many farms, of seed cotton, 948 pounds. The same amount of fertilizer was applied in both cases. These results indicate real promise in that kind of a rotation for the Southeast.

In the Western States, I might give you an example where they have tested the results of combinations of practices on sugar beets at Huntley, Mont., and at Newton, Utah.

These tests involve a combination of (1) cropping system, (2) adequate fertilization, (3) timely irrigation, (4) early planting, and (5) weed control. At Huntley, Mont., the resulting yield was 20

tons per acre, compared with 13 tons, which is average for the irrigation project.

At Newton, Utah, the range in yield was 14 to 28 tons.

Some tests in the Columbia Basin indicated that excessive irrigation meant the loss of nitrogen and lower yields of beets.

SOIL IMPROVEMENT, PLANT NUTRITION, AND SALINITY CONTROL

We conduct fundamental research on the chemical, physical, and microbiological properties of soils and their effects on plant growth and nutrition. The work is conducted at three laboratories: the Plant, Soil, and Nutrition Laboratory at Ithaca, N. Y., the Salinity Laboratory at Riverside, Calif., and the Soils Research Laboratory here at Beltsville, Md. At Beltsville some of the work is cooperative with the Atomic Energy Commission on the use of radioactive tracer techniques.

One example of that work which indicates considerable promise is recent research on lime chlorosis.

Western soils make iron almost wholly unavailable to some of the plants, and they have discovered that complex chemicals, which are called chelates (kee-lates) prevent the iron from becoming fixed. In other words, the iron is kept in a form available to plants.

So far that work has been conducted in the greenhouse at the Beltsville laboratory, but it indicates considerable promise in solving the problem of lime chlorosis. It is a sample of the basic and fundamental research that is needed as a foundation for the applied research.

Work on salinity problems is, of course, tremendously important basic work, both to the conservation program and to irrigated farming all over the West, and in the Eastern States as well where there is a considerable increase in supplemental irrigation, as you know. The workers at the laboratory have developed more accurate measures for determining salinity tolerance in soils and water.

IMPROVEMENT OF FERTILIZERS

I will go on to the work in fertilizers and their improvement, which involves new and improved methods of lime and fertilizer production, and other fertilizer and lime problems. This work is basic, chemical work on the technology of fertilizer formulation in the laboratory here at Beltsville and in cooperation with TVA, where some pilot-plant work is underway.

The recent results that I want to mention are the development of enriched superphosphate. By using a mixture of sulfuric acid and phosphoric acid, and operating essentially the same plants and equipment they formerly used with sulfuric acid, they have developed a 30 percent P_2O_5 phosphate fertilizer. This means they have added 50 percent phosphate to the phosphate fertilizer, and, of course, the really good part of that is that they can use similar equipment for the higher analysis material.

Eight plants are already using this new process.

WATERSHED HYDROLOGY RESEARCH

Now, Mr. Chairman, I want to go to the management of agricultural watersheds, the watershed hydrology work, which includes

studies in hydrology, hydraulics, and sedimentation, at 14 locations in 13 States, as you saw on the map. Well, I guess you didn't see the locations of the work in hydraulics on that map. Dr. Ackermann, would you get out that other map as well?

You will notice on this map that we have shown the same watershed projects in black squares. Then there are projects in hydraulics at St. Anthony Falls, Minn., and in Stillwater, Okla. We also have a sedimentation project in Mississippi, another one in New York State, and a third at Lincoln, Nebr.

Mr. WHITTEN. When was that put in that location in Mississippi?

Dr. JOHNSON. It started in 1948, shortly after the beginning of the flood control action program in 1946.

In this work we are giving special attention to small watersheds, trying to obtain factual data on water yield, peak discharge, infiltration and other factors in the watershed that may effect runoff and water yield under different conditions of soil, land use, watershed size, and climate.

Now, these results as you know are used in land treatment programs for minimizing floods, for reduction of reservoir silting, and for conserving the soil.

Now, I think, Dr. Ackermann, that the committee might be interested in some of those pictures you have.

PUBLICATION OF RESEARCH RESULTS

Mr. WHITTEN. First, what are your findings? Do they get to be a pamphlet of the Department of Agriculture or are they a release of the Extension Department?

Dr. JOHNSON. They are research reports. These are the very recent ones.

Dr. ACKERMANN. They take several forms, Mr. Chairman. This one was published in the proceedings of the American Society of Civil Engineers. It is a report on the Box Inlet drop spillway.

This one on the straight drop spillway stilling basin, is from the University of Minnesota and the St. Anthony Falls Hydraulic Laboratory. Here is another one called the Coshocton-type runoff sampler. This happens to be a United States Department of Agriculture publication. The fourth one that we brought with us Measuring Runoff Rates With Rectangular Highway Culverts, is a joint publication of ARS, and the agricultural experiment station of Oklahoma A. and M. College.

Mr. WHITTEN. Where do those projects originate? Do the colleges desire to have the work done so that pamphlet can be released, or do you do the work and then find someone to join with you to issue it? Just how is that done?

Dr. ACKERMANN. I think it depends on circumstances, Mr. Chairman.

In this particular instance, the Oklahoma A. and M. College took the initiative in actually carrying on the reproduction of the report. The project leader at the project is an ARS employee. There is another full-time ARS employee and a full-time college employee on the staff. That is the professional and subprofessional staff. It is a matter of which of the cooperating agencies is in a position to publish it first, and we don't have any great preference as to the medium.

We are anxious that it become available as soon as possible, and these are all recent reports.

Dr. JOHNSON. Let me add this, too, Mr. Chairman. We do work cooperatively with the land-grant colleges. Now, cooperation means team research and it is voluntary. It is an agreement on the part of both parties. We outline the work plan for the research cooperatively. We work as a team during the conduct of the research project, and then, of course, there is discussion and agreement as to who might actually sponsor the publication.

EXAMPLES OF HYDROLOGY RESEARCH

I would like, too, if we may, to show three pictures of the drop spillway that was designed at the St. Anthony Falls Hydraulic Laboratory where we had a man working with that laboratory.

This shows the picture of a stilling basin that was developed at that laboratory. This is widely used to dissipate the energy of the water at the outlet of several types of conservation structures. This one is an outlet of a 48-inch diameter closed conduit spillway.

Now, this stilling basin used in this instance is to dissipate energy and prevent scour below a straight-drop spillway.

This one is to dissipate energy below a 40-foot high chute. The effectiveness of the structure is demonstrated by the absence of scour downstream from the structure.

These designs have been very important to the Soil Conservation Service and to other agencies that are developing conservation structures. I think the Soil Conservation Service estimates that as a result of those designs developed at that hydraulic laboratory, they are saving in the cost of structures, some $200,000 a year and that is a pretty conservative estimate. A detailed description of those structures are prepared for the use of Soil Conservation Service, and other engineers.

Just one other example of this hydrology work, and this one with respect to hydrology of agricultural watersheds, showing the runoff, infiltration and water yield under different sets of conditions.

Just show this chart, if you will.

These results are from the Hastings, Nebr., location, and you will notice the two curves, showing the peak discharge, and also the total runoff under each curve. This one for an untreated watershed and the other for a treated watershed, after a deluge rain of about 10 inches, July 10, 1951.

The watersheds were of equal size. They were about 400 acres each. The watershed which had about 65 percent of the area under soil-conservation treatment, shows about half the peak discharge and a reduced flood run-off as compared with the untreated watershed.

That is an indication of how you get research results by studying the watershed as a whole.

INCREASE FOR WATERSHED HYDROLOGY RESEARCH

Now, then, as I said a little while ago, this is the only increase item that we are requesting in soil and water conservation, an increase of $100,000 to strengthen the research in agricultural watershed hydrology.

Mr. WHITTEN. May I interrupt, there. We always hear about so much money to "strengthen" something. Maybe it does and maybe it doesn't. It possibly should, and I presume some of the time it does. But we want to know how many men you are requesting and where and how many more projects you are proposing. In other words, give us the details.

Dr. JOHNSON. All right.

The map that you saw a while ago indicates the number of locations that had to be closed out because of lack of funds. That data has not been tabulated. We haven't had the resources to tabulate that data, to make it available for the watershed-protection program, and for other conservation work. As the funds were reduced and as the costs went up during the war and since the war, the supervisors felt that it was desirable—and it was desirable—to continue as much of the record work as they could, because you need a record over a period of years in order to get the kind of experience that was just shown on the chart for Hastings, Nebr. They continued the record work at as many locations as they could. They closed out the others. Now, the data are there to summarize, to analyze, and to make available. It is of rather short duration at some of those locations. At locations that are still going, we have what we feel is a fairly good record and, as a matter of fact, we do plan to shift some of the engineers and the clerks in such a way that they will be working on summarization and analysis, to make the information available as rapidly as possible.

But we have a large volume of data. It will take a lot of work, and it will take a long time to do the job.

As a matter of fact, we estimate that with the increase of $100,000 plus the workers that we plan to shift and also devote to it, that it will take 2 to 3 years to complete the summarizing and analysis of available data.

It is a job closely tied to the operations program. It is very much needed as background for the planning of the watershed-protection work.

SUPPORT OF HYDROLOGY DATA WORK BY ADVISORY COMMITTEE

It is the job that has been identified as of greatest urgency by the Soil Conservation Service Research needs statement that I mentioned at the beginning of my testimony. And for the last 3 years, the Soils, Water and Fertilizer Research Advisory Committee of the Department has put this work at the highest priority level in this general field.

At a meeting in January this year, they made the following statement:

> The committee, again, urges the Department to give highest priority to the intensive analysis, interpretation, and publication of accumulated hydrologic data. The increasingly critical problems of water supply, conservation, control and use, and the accelerating activities in watershed protection, floodwater detention, and water appropriation all point to the need to make these important data available for use. The committee gives this recommendation the highest priority among all the recommendations made in this report.

I think, Mr. Chairman, that the Soil Conservation Service would say the same thing as the Research Advisory Committee did.

Now, this $100,000 would involve 18 man-years of personal services. They would be located at the going locations and at some other locations where the analysis work would be facilitated. We are spending about $377,200 for all the watershed hydrology work, at the present time.

Mr. WHITTEN. Mr. Marshall, any questions?

QUESTION OF SHIFTING EMPHASIS ON CERTAIN PROJECTS

Mr. MARSHALL. Dr. Johnson, you state a very strong case for this work.

I notice in going over your items that you have some other items, that depend somewhat upon the income of farmers, as to whether they make use of that information or not. With the prospect of less income on farms, naturally there is going to be less money spent for some of these items.

Might it not be just good business with the Federal Treasury in the shape that it is in, to go a little more slowly in some of these other items and use some of the money from there for this other purpose?

Dr. JOHNSON. There are two things involved in that, Mr. Marshall. One is that this watershed hydrology work is very specialized work and utilizes hydraulic engineers.

Mr. MARSHALL. I understand that and I have been interested in the strong case you make for that particular item.

Now, what I'm suggesting is that perhaps some of these other items might not be as necessary since it will require income of the farmers to put those research developments into effect on their farms.

Might not it be good business to go a little slower on a few of these other things and pick up some money from those projects and put over on this one? That's my question.

Dr. JOHNSON. First of all, research is a long-time job. That means that you need to continue it over a period of years. If you close out work that has been started, of course you lose what you close out and it is almost impossible to pick it up again because you don't have continuous information.

If we are going to make progress in research of this type, we have to make progress in terms of continuously building a research program.

The other answer I would make is this, that this work is closely related to the farmer and his problems and to the soil conservation programs. The results of work on soil and water management and on fertilizer and on the other aspects that I mentioned, are the type of research results that I think the farmer will use somewhat, regardless of the income situation.

Mr. MARSHALL. Dr. Johnson, I haven't suggested that we drop any of these things. I just suggested that it might be possible to slow that down. You have the sum here of $862,200, in one item. You have $1,413,800 in another item; $643,700 in another item; $348,300 in another item; and that is over $3,300,000 in those items. I am suggesting that perhaps it might be possible to pick up a small proportion of $100,000 from those other items, in order to do this work.

Now, that isn't dropping any of these other items.

Dr. JOHNSON. It isn't dropping the entire item, but it would be dropping work underway and work, by the way, that undergirds and

ties together the operations program not only in the Soil Conservation Service, but other programs as well.

In other words, I feel that all of this work is tremendously important and that it does need to be carried on at the level that it is now carried on. If the budget ceiling had permitted we would have requested some increases in those lines.

Mr. MARSHALL. Has there been any tapering off in the last 5 years, of any of these items that I have read?

Dr. JOHNSON. I do not have the record here for each one of the last 5 years, but I know this, that there have been continuing reviews and there has been shifting of work within each of these fields to bring it up to date. This work is reviewed each year by the Soils-Water-Fertilizer Research Advisory Committee. Their recommendations are taken into consideration in making plans for the year ahead and the recommendations of the Soil Conservation Service, as I previously mentioned.

COORDINATION OF RESEARCH LINE PROJECTS

Mr. WHITTEN. Here is what makes it difficult for us: We have a list, here, of the various projects that come under this. I see that project SWC, R3–1, is listed as "inoculation of legumes."

Later on we find another project entitled "improvement in legume inoculation, in testing commercial legume cultures."

In going through this list of many, many line projects indicate that, so far as title is concerned, they are very much like what you are doing under the horticultural crops research that was testified about here yesterday. I assume that there are several lines of work in connection with each of these. But why would we have separate money and separate listings under two separate sections? That raises a very serious question.

Dr. JOHNSON. I am not certain, Mr. Pate, whether that particular project is in cooperation with the horticultural branch.

Mr. WHITTEN. I was in error. It was field crops, rather than horticultural.

Mr. PATE. We have in our branch, Mr. Chairman, SWCd 1–6, "Improvement of legume inoculation and testing commercial legume cultures" which is studied from the laboratory phase of the inoculation procedure. The study of soil micro-organisms is conducted in the Soil and Water Conservation Research Branch. In the case of those organisms involved in legume inoculation, we work closely with the Forage Station of the Field Crops Research Branch. There is no duplication of work.

Now, the line projects you just read, SWCb 3–1 "Inoculation of legumes," is field testing of the laboratory findings under SWCd 1–6. It so happens that the same person is the work project leader. He is jointly employed by the section of Soils and Plant Relationships and the Eastern Soil and Water Management Section, in order to integrate and coordinate that work.

LOCATIONS FOR SOILS RESEARCH IN THE HUMID REGION

Mr. NATCHER. The whole amount for humid regions research is the same amount, I believe. I believe you stated this research was carried on in some 24 places.

Dr. JOHNSON. Yes, sir, in 20 different States and Puerto Rico.

Mr. NATCHER. Now, Dr. Johnson, maybe it was on one of these charts or maps that you kindly showed the committee, but how many of these locations are in the South? Do you recall, Dr. Johnson?

Mr. PATE. I have it listed alphabetically by States and would have to go down through it.

Dr. JOHNSON. Soil and water management research is carried on in 10 Southern States including Oklahoma and Texas.

Mr. NATCHER. As far as research concerning humid regions, what in your opinion would be the most important part of this research, insofar as humid regions are concerned? Just break it down. Give one of the important projects.

Dr. JOHNSON. Well, of course, we think that all of the work that I have described is important. We feel that this watershed hydrology is tremendously important, as a foundation and backstop for the action program that is underway.

Now, then, last year, the Congress made the water facilities program available in the 31 eastern States, which facilitates loans for supplemental irrigation, and we needed badly more research both on the physical aspects of irrigation, which would be in this branch, and on the economic aspects—the question of what the costs and returns are, from supplemental irrigation.

Mr. NATCHER. I was just wondering, in this particular phase of the research program, if there was an overlapping as to soil conservation—if there would be any overlapping, at all.

Dr. JOHNSON. I don't feel that there is any overlapping. All of the research work is carried out by this Branch.

Mr. NATCHER. Thank you, Dr. Johnson. I enjoyed your statement.

AGRICULTURAL ENGINEERING RESEARCH

Mr. WHITTEN. You might proceed with agricultural engineering research. We will be glad for you to give particular reference to the $50,000 increase.

The budget shows you had $1,509,700. How many projects do you have under that?

RESEARCH LINE PROJECTS

Dr. MCKIBBEN. I will try to get that for you.

Mr. WHITTEN. Approximately how many?

Dr. MCKIBBEN. About 90 line projects.

Mr. WHITTEN. How many did you drop last year and how many new ones did you initiate? And what is your expectation with regard to this year and next year?

Dr. MCKIBBEN. Nine line projects are being terminated in fiscal year 1955.

When we complete our plans for fiscal year 1955 we will add about five new line projects. The plan for the increase requested for fiscal year 1956 is for two additional line projects.

Dr. JOHNSON. I would like to say in response that research in agricultural engineering isn't a type of research that has rapid turnover. You have to stay with it for a period of time in order to get some really worthwhile results.

USE OF INCREASES FOR FISCAL YEAR 1955

Mr. WHITTEN. Doctor, I can appreciate that. But I was wondering where in this research field you can find those that you do get through with.

What did you do with the $120,000 extra that was provided by the Congress for the current year?

Dr. JOHNSON. That work, excluding the funds for the construction of a cotton ginning laboratory for the Southeast was in two phases.

CONSERVATION EQUIPMENT RESEARCH

One was the work on conservation equipment, the problem of working out improved equipment for conservation farming. A part of those funds were allocated to the tillage machinery research laboratory at Auburn to work on that phase of the problem and a part of them at Ames, Iowa, to work there, especially on conservation equipment. The other location is at Pendleton, Oreg.

Mr. WHITTEN. Is that just contributions to the colleges or the experiment stations?

Dr. JOHNSON. It is cooperative with the experiment station. However, as I said awhile ago, we look upon this cooperation as team research, and this is research that we suggested.

Mr. WHITTEN. I am not attacking this at all. But is this just another means of making further contributions to the State experiment stations? There is quite a substantial appropriation for them each and every year. It was raised last year and it is requested to be raised again this year.

Notwithstanding the fact that the Federal Government makes that appropriation directly to them, do you have to give them more money to get them to do something that you want done?

The payment to State experiment stations last year was $19 million, and next year it is $24 million, or an increase of $5,300,000. Having made that as a Federal appropriation, I am wondering if this is just a means to make still further grants to the State experiment stations.

Dr. JOHNSON. Well, let me say on that, Mr. Chairman, that our attitude is this: It is a type of work that we and the Soil Conservation Service felt should be done. Dr. Salter and Dr. McKibben explained it to you last year. Employees of both our Soils and Engineering Branches are stationed at Ames.

Mr. WHITTEN. We don't differ with that at all.

Dr. JOHNSON. In undertaking the work, we felt it would be advantageous to cooperate with Ames, Iowa, on this project. Let's consider that location for the moment.

They do have facilities of which we can make use, and they do have some trained personnel that can work with us on the problem. And so we felt that it was to the advantage of the Department of Agriculture to use those facilities—and of course, we are all trying to serve the farmers as best we know how.

Mr. WHITTEN. I am not trying to say that that is not good.

Dr. JOHNSON. We felt that we could get more effective work done if we did it this way than if we tried to do it by ourselves. Frequently, such cooperation means much more in the way of results and much better use of facilities. In this particular job, we would have had to

go to the expense of establishing facilities and we are making use of the facilities that are there.

EQUIPMENT FOR HARVESTING FRUITS AND VEGETABLES

Now, the other item of increase is the increase for the harvesting of fruits and vegetables. I think Mr. Horan is acquainted with that one, where we have established work in Washington, at Wenatchee, and in East Lansing, Mich., in cooperation with the experiment stations. At the Wenatchee location, the State people are providing new buildings and making their proportionate expenditures for this work. So that it becomes truly team research. It is voluntary on the part of both parties.

Mr. WHITTEN. Do you intend to keep that work going year after year?

Dr. JOHNSON. The work has started, Mr. Chairman, but we realize that the question of mechanization of the fruit harvest cannot be answered in 1 year.

We have some very interesting results, by the way, on speeding up the picking of apples in Michigan where they have worked on that phase while they were getting into the question of harvesting with the mechanical equipment.

Mr. HORAN. That work has been going on for several years.

Dr. MCKIBBEN. Not on apples, particularly, but on other fruit.

Mr. HORAN. Yes.

Mr. WHITTEN. That points up the problem we have. Of course, in any field, you can keep studying for 50 years how to do the same thing better, and you never would get to the point where you couldn't still study it. But with a limited amount of money, as we always will have, it looks like you could learn it pretty well for the moment and give your attention to other pressing problems. That is a constant problem in your field.

Dr. JOHNSON. I know, and I think we all recognize, Mr. Chairman, that there has been a great deal of mechanization and development of mechanical equipment in agriculture. We have the tough problems left. Now, fruit harvesting is a tough problem. Tobacco harvesting, we haven't even started on.

Mr. WHITTEN. I don't question them being hard. But I would like to say that some of those we have had in the past have been hard, judging by the length of time you have been working on them.

Mr. HORAN. We don't know whether they feel good or bad when they get through.

Dr. JOHNSON. They have been hard, and we cannot promise quick results from research in this field, or in many other fields.

It is like growing an orchard. It takes time to grow that orchard and after awhile you get some fruit and you harvest it.

Mr. WHITTEN. But the trees come of age some day, Doctor.

Dr. JOHNSON. Yes, but just like research, that takes a long time.

Mr. WHITTEN. Mr. Marshall?

Mr. MARSHALL. Dr. Johnson has had quite a lot of experience in farm management and there has been certainly a cost squeeze on, as far as farmers are concerned.

Dr. JOHNSON. That is right.

SAVINGS IN USE OF FARM MACHINERY

Mr. MARSHALL. What are you doing in the line of research that would give some indication as to how much saving the farmer might make on his equipment? Machinery is one of the big items in our cost of production on the farm. If we get less for what we have to sell, we are going to have to try to produce for less.

Dr. JOHNSON. That is right, and all of the work in farm power and machinery in this branch, has that for its purpose. That is to do the job better or to do it at lower cost.

Now, in that connection, I would like to illustrate just one example—now, it isn't in your particular part of the country, but it is down in the cotton country, in the southern plains: the folks working on cotton mechanization in the southern plains realized that farmers frequently had to plant and replant, maybe 2 or 3 times, because the cottonseed would dry out. They lister plant down there, and with low and erratic rainfall, the seed would dry out if it didn't rain and if they got a heavy rain the soil would crust, and the seed wouldn't emerge.

So, one of our engineers working down there, stationed at Lubbock, Tex., worked out some new techniques for planting cotton under those conditions.

Mr. WHITTEN. Now, he is available for work elsewhere? Where did you send him, Doctor?

Dr. JOHNSON. What is his next assignment there, Dr. McKibben?

Dr. MCKIBBEN. There are, of course, other mechanization problems and he is working as a part of a joint project in the Southern States with men stationed at several locations in the cotton States.

As a matter of fact, the man who is tying together this work is located in Mississippi, at Mississippi State College.

Only a part of this particular worker's time was concerned with research on the problem of cotton-planting equipment and practices to improve emergence. With progress on the solution of this problem he will be able to give more time to research on other problems of more effective mechanization of cotton production and harvesting in the high-plains area. A particularly urgent need is an efficient cotton harvester which will cost less than conventional spindle-type pickers but at the same time produce much cleaner seed cotton than present stripper types.

Mr. WHITTEN. We will recess now and continue on this subject again tomorrow.

FRIDAY, FEBRUARY 4, 1955.

Mr. WHITTEN. Gentlemen, the committee will come to order.

Doctor, we had gotten down to production economics research. I would like for you to continue with that.

Dr. JOHNSON. Pardon me, Mr. Chairman, I do not think we got to the question of the increase for agricultural engineering research.

Mr. WHITTEN. Will you cover that item, then?

INCREASE FOR RESEARCH ON EQUIPMENT AND STRUCTURES FOR SILAGE

Dr. JOHNSON. This increase of $50,000 involving 7 man-years of work is for the purpose of developing improved equipment and low-

cost structures for making, storing, and feeding silage. That work is badly needed for low-cost harvesting and feeding of roughage supplies in all parts of the country—for winter feed, for summer feeding when pastures are short. We need to compare silage-making with other methods of harvesting forage, especially the grasses and legumes. The nutrient losses that occur in haying under the best of circumstances amount to about 30 percent, and if we get rain on the hay, it runs it up as high as 50 percent. I want to mention especially the potentialities of using grass silage in summer drought periods.

I was interested in this, Mr. Chairman, about the middle of May last year when I was down in the Southeast, in Georgia and Alabama. On some of their improved pastures and meadows, they had lots of forage at that time. Then the drought came along and of course they were in very bad shape.

Now, it seems to us that grass silage properly put up and using economical structures could do a great deal to tide over a drought period. Of course, last year was an unusual one. But they frequently have something in the way of a summer drought period in that part of the country and in other areas as well. In the Great Plains country they have drought years and feed shortages every once in a while. They do not know when drought years are going to come along. Silage offers one of the great opportunities of tiding over years of short feed supplies.

There are some real obstacles to be overcome in using more silage in these areas. The reason that grass silage, and, for that matter, corn and sorghum silage, have not increased more rapidly than they have, especially in the Great Plains country and in the South, is (1) because of the cost of equipment for harvesting, (2) the high cost of permanent silos which have been the usual thing in the northern part of the country, and (3) feed losses in temporary silos, and then (4) the labor of handling silage.

At the present time there is a great deal of interest in the horizontal or so-called bunker silo. Arrangements have been made for self-feeding in a horizontal silo. It is being tried out. This arrangement offers considerable promise and we would plan to study that very thoroughly and compare it with other possible structures.

Mr. WHITTEN. I recognize the need and the value of that, but how are you going to handle this money? Is this going to be handled on a contract through the State experiment stations?

Dr. JOHNSON. We may contract some of it. I am not sure that it would be a contract with a State experiment station. A part of it would be used here at Beltsville where we would cooperate with the Livestock Research Branches on the work. Doing some of the work here at the Beltsville Station would have the advantage of close cooperation with other researchers here, and it would be a sort of pilot test for the other areas.

USE OF APPROPRIATIONS FOR FEDERAL OR STATE RESEARCH OR FOR CONTRACTS

Mr. WHITTEN. Dr. Shaw, I think in the overall, we have done lots of very fine work with our research. But I have gotten particularly interested in the mechanics of this thing. We had, yesterday afternoon, a witness here who was having lots of trouble with nursery

stock, due to what some thought was a virus affecting apple trees. He happened to be from the State of Iowa. He had been, as usually is the case, to the State people and they did not have money. They were already doing a lot of investigation on viruses. The State man showed him how much money they were putting up and how relatively little the Federal Government was putting up, according to his tables. We questioned then to see what part of the so-called State funds might have been from Federal payments to the experiment stations. They had become State funds and they could not help meet the Iowa man's problem, in Iowa. That was the statement. He was at Ames. Then he came to Washington saw 3 or 4 of you gentlemen, and you said you did not have any money for apple viruses.

Well now, let us get it straight. You have $35 or $36 million for research. We never have tried on this committee to tie it down that tight. In an effort to keep anyone from saying; "we haven't got any money for that," I want to point out again that, while you may justify project by project before our committee, it has always been the understanding that certainly, up to a 10-percent shift from one project to another as circumstances may dictate, there is no objection to your making such shifts. We agree to that, because we realize that more serious things may show up in the course of the year. The law itself authorizes a shift of 7 percent within the Department of Agriculture from one appropriation title to another. So I hope that we will never hear anybody say again, as was said to this man yesterday afternoon by your folks, that we do not have any money for that.

Now, had they said: "the only way we can do that work is by taking away from some of the things that we are now doing. We will be glad to hear your problem and consider your problem in line with what we are now doing to see whether it is sufficiently important to slow down on something else," it might have been different. I do not mean to lecture, but that did occur here yesterday afternoon.

I am wondering what part of the money that you get for research in the Department of Agriculture has been expended in the way of contracts with private institutions to do specific jobs, what part of it has been spent in operations within your own stations that belongs to the United States Government, and what part of it you have spent by adding it to the State experiment stations which already are the recipients of $19 million annually.

CONTRACT RESEARCH

Dr. SHAW. I am not going to be able to give you specific figures on all parts of your question, Mr. Chairman. On the contract work, in 1955, this current year, the Department is spending a million and a half dollars out of its total funds. We are using $700,000 in ARS for contract research.

Mr. WHITTEN. Is any of that under contract with State experiment stations?

Dr. SHAW. It is.

Mr. WHITTEN. So when you want to get them to do something that you have an interest in, instead of them being able and willing to work with you and do it as part of their program, you have to pay extra for something you are interested in.

Dr. SHAW. We have contracted with them, I would assume, for probably 50 percent of our contract work.

PAYMENTS TO STATE EXPERIMENT STATIONS

Mr. WHITTEN. We will probably develop this further when we get to the State experiment stations. I have had in times past many of them come to me for increases in their appropriation, almost without exception I have said: "I think you do good work. If you will come and tell my committee what you are doing now and what you want the extra money for, I think we can get it." Many times they have said: "No, we would rather do without the money than report what we are doing and have the Congress tell us what we should do." I have had several of them tell me that.

Now, as I recall, this Federal payment is made because there is a recognition of a Federal interest in all this research. So the Congress has repeatedly appropriated it. But instead of using that money to meet what appears to be a primary interest to the national welfare, they won't do that unless you in turn agree to pay them extra from your own appropriation.

Dr. SHAW. They are using both their State resources, which this past year amounted to about $67 million of State funds, along with just about $14 million of the Federal grants, making a total of around $81 million for research at the State experiment stations. They are using those resources—certainly, in the judgment of that experiment station director, on the problems of highest importance and priority in the State.

Now, in terms of some of this contract work, I assume that they would be up against the proposition that if they were to do it, without expecting any return of funds from us, that they would be required to cut out some of their work which they would consider more important.

Mr. WHITTEN. How would it do if, instead of giving you this money in the first instance, we just add it to the payment to States and did away with the Federal work in these places where you contract?

Dr. SHAW. I think the difficulty that we would experience is this: most of our contracting, as you know, has been with utilization laboratories, the four regional laboratories, where we are developing new products, and we may have developed a new feed and we want to have it evaluated. In order to get it evaluated, it has been necessary for our laboratories to pay practically all of the cost of having the feed evaluated.

Mr. WHITTEN. We have this man here from Iowa, a nurseryman, who presents a matter of great importance to nursery people and those in the apple-growing business throughout the area of Iowa.

Mr. VURSELL. An almost emergency.

Mr. WHITTEN. That is right. So he goes to his State experiment station, to the State land-grant college—I imagine Iowa rates with the best in the United States—and they proceed to show him they haven't got the money. I may be wrong, and I do not mean to accuse anybody falsely, but from the table it looked to me that, once we paid the money through payments to States, from that time on they call it the State of Iowa's money, So, even though this is an Iowa problem,

he is sent to Washington and when he gets back there, out of $35 or $36 million, the United States Government has no money.

For most of these contracts, as you say, it would mean that they would give attention to this particular problem, maybe to the exclusion or retardation of others. But in most cases your contracts are in areas where the area itself has just about as much interest in the problem as any other section of the country. Most of the time you put your project in an area where the problem exists?

Dr. SHAW. That is right, sir.

RESPONSIBILITY OF STATES TO PROVIDE FUNDS FOR RESEARCH PROBLEMS

I might give you an example to express my own attitude on the question you are discussing. It is a rather concrete one and has come to me in the last 2 weeks. We have quite a problem out in the State of Utah with fluorine coming out of the stacks of the plants which manufacture phosphate and also from steel mills. It is quite a serious problem, very serious. Now they are having the same kind of difficulty up in Idaho at Pocatello. There are some phosphate plants up there so they have a similar problem. I have representatives, including the director of the experiment station from the Utah Agricultural College, and farmer representatives call on me to impress on me that some of our Federal funds should be allocated to the study of that problem. I told them that we had not made any special provision either in terms of our current funds or in the 1956 increases for this study. I reminded them of the fact that the Federal Government contributed an increase of $5,700,000 of Federal grant funds to the State experiment stations for the current fiscal year, 1955, and that the budget that is before the Congress has in it another increase of $5,300,000 of Federal funds for State experiment stations.

I pointed out to them that these funds were intended to help them study the problems that were of the greatest importance. Unless they were willing to use these funds to study the problems of the greatest importance, I doubted that we could justify continuing increases.

I pointed out to them how much out of the last year's allocation went to each one of the States out in that area, and how much would go to each one of the States if this budget were approved. Also I pointed out to them that the legislation provides for matching funds from the States to go along with the Federal moneys. It seemed to me that this problem of fluorosis was of extreme importance to the States and I said, unless you are willing to use your Federal grant increase funds for this study, I don't see how I could recommend either to the Secretary of Agriculture or to the Congress that we use any of our other Federal funds for studying this problem. And in addition, I pointed out that the legislation we are operating under provides that, in addition to the allocations to the States, up to 25 percent of the Federal grant increase funds may be used on regional projects in which two or more States can get together. It seemed to me that this was the kind of a problem on which the States from that area ought to get together and to use their funds, State funds, as well as these Federal grant funds. That is my own impression of what ought to be done and that is what I am trying to implement.

RESEARCH PROJECTS OF STATES

Mr. WHITTEN. Doctor, that, in my judgment, speaks well for your efforts. It brings up the other side of the same question. I think I have learned in my years on this committee that, once the payment is made to the State, there is no control at all by the Congress or by the United States Department of Agriculture as to the use of those funds as long as it is within the law.

Dr. SHAW. The initiation of the project is with the director of the State experiment station.

Mr. WHITTEN. That is right, and you try to serve as a clearing house; but there is nothing to prevent two States side by side from doing exactly the same work on the same experiment. I know they try not to, but I know there is nothing to prevent that from occurring and there is nothing to prevent a lot of other duplication insofar as any control that we have here in the Congress is concerned.

Now, as we saw in this illustration yesterday, once this payment is made to the States, neither is there any way for us to require that any part of it be used for what may be the most serious problem in that area. But as happened in this case, the man is sent back here to Washington to get relief, though he is right out there and it is a State problem.

CONTROL OVER FUNDS ALLOCATED TO STATES

I am asking if, instead of constantly increasing the amount of payments to the States where we lose all control and lose all rights for detailed reports as to what they do with the money, we should give added attention to your appropriations, so that you would have, at least, some control over expenditures. I am just trying to see under which method we would come nearer to getting results from the money appropriate for research. I know the State experiment stations themselves do a good job as they see it. I do not mean to leave any misunderstanding about that.

Dr. SHAW. I think that currently, in spite of some of the difficulties that you have mentioned, and that I recognize, that we are getting good work done by the current system.

Mr. WHITTEN. I agree with that, Doctor.

Dr. SHAW. I think we could get good work done the other way. There is no question but what the Congress does have more control over the funds that are used directly by our agencies than they do over the funds used by the States. And certainly, what I would want to do in any case is to try to develop the best program we could in any way that the Congress decided to handle the situation.

I do not know that anybody could actually evaluate which way would be best. In my judgment the current system is to be preferred.

Mr. WHITTEN. May I keep the record straight? By pursuing this line of questioning I am not trying to say that it has got to be 100 percent one way or the other. I thoroughly agree with you that a combination of the two is far better than either of the others. I am raising the question as to whether continued additional emphasis to the one is as good as to provide more balance to the increased emphasis, so that here in Washington you will have the chance to direct it toward the major problems to some extent.

JOINT FEDERAL-STATE RESEARCH PROGRAM

Dr. SHAW. What we have had as a general pattern in the past—I am going back beyond this current year—is that the States and the Federal Government were each contributing about 50 percent of the total funds for agricultural research. Of the Federal funds, about 1 part was going to grants to State experiment stations and 3 parts to the Federal agencies. That has been the pattern. I think it has been a good pattern. I think that we have done good work. I feel that having this Federal grant research, as we have had, has helped in achieving a coordinated national program of research. While to be sure the director of the State experiment station has all the initiation under those funds, the fact that the projects do have to be approved for compliance with the law does give us an opportunity to check those projects one with another and to go back and tell the States that a neighboring State is working in the same field. That at least gives them an opportunity to prevent duplication and to develop cooperation.

Mr. WHITTEN. I think you and I both agree that they can make a decided effort to prevent it.

Dr. SHAW. Then over the years, having that kind of a relationship on the Federal grant funds, one by one the States have found our services sufficiently valuable so that they are now transmitting to us practically all of the projects that they finance on State funds as well as those on Federal funds. So that we not only are looking for duplication and cooperative effort and so on, on all the Federal grants to State experiment stations but we are looking among their State projects, too, and can advise them of the need for cooperation.

In addition to that we do have people from our office, the Division of State Experiment Stations, go out and review this work annually, at each experiment station. In that review we spend about 3 weeks, for example, in Alabama. Then we go over into Georgia for the next 3 weeks. We are able to call attention from our direct knowledge that the research in Alabama is coming along this way, and that maybe you in Georgia ought to take your project and your interests a little the other way. I feel that the Federal interest is being served by making these Federal grants to State experiment stations. Maybe we could go along on essentially the same basis as we are if we did not have them any more, but I would be inclined to doubt it. The fact that we do review the Federal grants gives us an opportunity to review all of their work and to provide some leadership in developing coordinated programs. The direct programs of our agencies in the Department, where we develop cooperation with the States, give us an additional opportunity of leadership to work with them to coordinate their efforts and ours.

Mr. WHITTEN. Thank you, Dr. Shaw; that is quite heartening. It is not that the committee is unaware of those things. But the fact that you feel as good as you do over the current situation is a real satisfaction to us.

I believe that you have covered that item of the increase, Dr. Johnson. I wonder if there are any questions on this particular subject matter before we pass to economic research?

Mr. MARSHALL. Dr. Johnson, at the present time, the farmer gets 43 cents out of the food dollar; 57 cents goes to other people. Now, the impression seems to be getting around that when the farmer gets 43 cents, that that is all velvet in his purse. Just what is the situation there? How many people do we have, for example, employed on farms?

Mr. HEISIG. Eight to eight and a half million employed on farms.

Mr. MARSHALL. That is on the farm?

Mr. HEISIG. That varies, of course, by season.

Mr. MARSHALL. Now, of the people who get this 57 cents, how many people are employed there?

Dr. JOHNSON. I think we can supply it.

Mr. MARSHALL. What I am interested in finding out is this: Out of that 43 cents that the farmer gets, there is a considerable amount of that that also goes to people who are supplying to the farmer the items that he needs in the operation. Could we get answers to those questions?

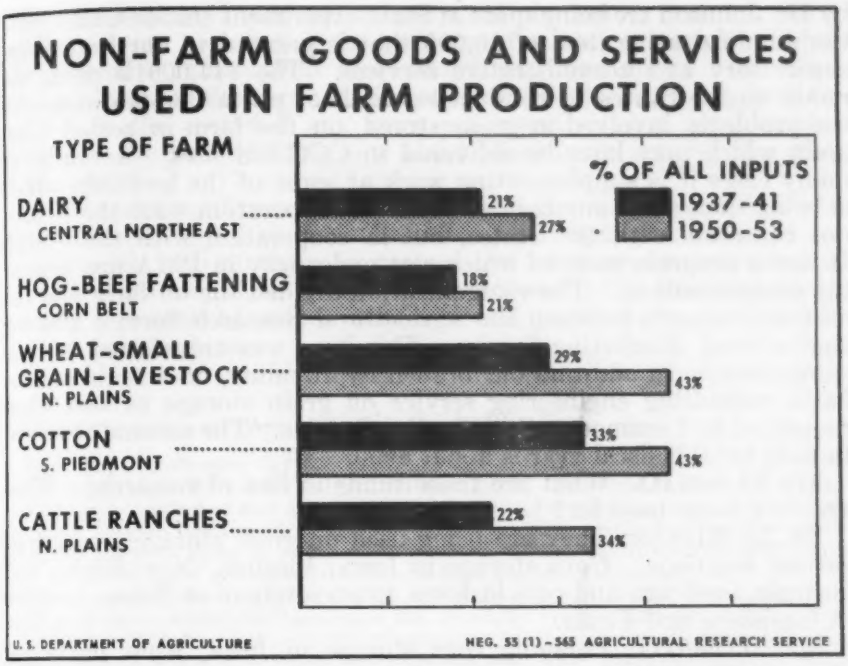
Dr. JOHNSON. On that particular point, Mr. Marshall, you might be interested in this chart: I have some of them to pass around. It does show, of course, that there has been a very considerable increase in the nonfarm goods and services that farmers have to buy in order to continue production on the farm.

We included in this chart five of the types of farms on which we have current costs and returns information in production economics. We have, as you know from previous testimony, and the notes in the progress reports, about 20 farm series of this type. The greatest change compared with prewar has been on the wheat, small grain, livestock farms in the northern plains where just before the war about 29 percent of the——

Mr. MARSHALL. Mr. Chairman, I do not mean to interrupt, but I think this chart would be excellent in the record with an explanation by Dr. Johnson.

Mr. WHITTEN. Without objection, it will be introduced.

(The chart referred to and the explanation are as follows:)



COST SITUATION ON SELECTED TYPES OF FARMS

The accompanying chart indicates that farmers are becoming increasingly dependent upon manufactured equipment and supplies in their farming operations. Machinery, motor supplies, fertilizer, pesticides, and electricity are among the things that farmers are using in larger quantities. In 1937–41 such nonfarm goods and services represented from 18 to 33 percent of total farm costs for the 5 types of farms shown in the chart. By 1950–53 these items had become much more important. They then comprised from 21 to 43 percent of total costs on the different types of farms.

The rapid commercialization of farming, with more dependence on purchased goods and services, means that farmers are more vulnerable to adverse conditions, whether they are caused by a drop in prices, drought, or other adversity. The farmer's investments in land, livestock, and machinery are also much higher. If he carries a heavy debt load the debt charges add to his vulnerability.

RESEARCH ON STORAGE STRUCTURES USED BY COMMODITY CREDIT CORPORATION

Mr. MARSHALL. In line with some of the items on which you are appearing before us, engineering research, what work are you doing in connection with storage structures used by the Commodity Credit Corporation. Are you carrying out some work in that connection?

Dr. JOHNSON. We are carrying out some grain storage research under Dr. McKibben's leadership on the transfer of funds of $44,000 plus some administrative funds, direct service research for CCC. Now, if you are interested in going into that, I will ask Dr. McKibben to explain it.

Mr. MARSHALL. I believe we should go into that item and find out what you are spending that money for.

Dr. MCKIBBEN. We are no longer conducting research at Commodity Credit Corporation bin sites. That work has been transferred to the Agricultural Marketing Service. The research funds mentioned

by Dr. Johnson are being spent at State experiment stations, all except the administrative item of $6,000 that is granted to our branch for supervisory and administrative services. The $44,000 is going directly to the States to conduct research of particular pertinence to the problems involved in grain stored on the farm in sealed bins, grain which may later be delivered to CCC bin sites. Actually, in many cases it is supplementing work at some of the locations which is being done with our regular funds in cooperation with the States, not contracts with the States, but in cooperation with the States. It was a program most of which was under way in PMA previous to the reorganization. The reorganization divided the on-farm and the off-farm research between the Agricultural Research Service and the Agricultural Marketing Service. This item was transferred to our supervision. In addition our branch is providing, on a reimbursable basis, consulting engineering service on grain storage as and when requested by Commodity Stabilization Service. The amount involved to date for this fiscal year is about $900.

Mr. MARSHALL. What are those funds in line of research? What are they being used for?

Dr. MCKIBBEN. They are being used on grain storage research at several locations. Corn storage in Iowa, Virginia, New Jersey, and Georgia, soybeans and oats in Iowa, grain sorghum in Texas, and rice in Louisiana and Texas.

Mr. MARSHALL. Pursuing corn storage in Iowa, what particular phase of it? Is it bin construction?

Dr. MCKIBBEN. No; primarily studies of the air-flow requirements, for bins of different size and construction in order to carry grain over more than 1 year, sometimes over a number of years. There may be moisture migration in a grain bin even though storage starts with a more or less uniform moisture distribution, at a level that would be safe if it stayed uniform. However, as a result of outside temperature changes, the thermal flow of air, and in some cases heat due to insect infestations, a situation may develop which produces moisture migration resulting in excessive moisture in the upper part of the bin.

There is work in Texas on grain sorghums, in New Jersey on small grains under the high humidity climatic conditions. Most of this work was set up and going when supervision was transferred to us. We feel this research has been and is a very effective use of the funds. These particular funds except for the small administrative item, are used by the States. They hire the workers. The responsibility of our staff is to help them develop their project work programs and to visit the locations to correlate the results and make them finally available to the Commodity Stabilization Service and to the public in general.

WATERPROOFING OF BINS

Mr. MARSHALL. Have you been doing any work with coating material or waterproofing material?

Dr. MCKIBBEN. I think not.

Mr. MARSHALL. You haven't been doing any work on that?

Dr. JOHNSON. Not on that phase.

Dr. MCKIBBEN. When you say coating, do you mean coating the grain.

Mr. MARSHALL. I was referring to coating the bin itself to protect the bin from outside moisture.

Dr. McKIBBEN. I am not positive. I do know that our farm building section has studied the problem of calking materials and has rather definite information and recommendation on at least some calking materials that are satisfactory for steel bins. I can look up and put in the record if any work is currently being done on this problem. Are you thinking now about the outside coating of a steel or wood bin?

Mr. MARSHALL. I was thinking of both the outside coating and the inside coating, of the material that you would put on a bin for two purposes, one of them to protect the moisture from coming in and the other would be a matter of protecting the material itself; whether it might be wood or metal, and particularly as it might affect aluminum bins.

Now, Doctor, if you will put something in the record on that, that would be fine.

(The information requested follows:)

When it was necessary for CCC to purchase grain bins in the spring of 1950, specifications were drawn for galvanized steel bins. However, a shortage of galvanized steel developed and alternate specifications for aluminum grain bins were prepared. Again because of metal shortages, aluminum of the composition specified could not in all cases be obtained and because of the urgent need for additional grain bin space, CCC permitted deviations from the specifications.

After the grain bins had been erected and placed in use, it was found that in a number of cases where the bins were not carefully erected and properly calked, rain water leaked in. Some of the aluminum bins became badly corroded. In view of this situation, the Farm Buildings Section, ARS, after consultation with CSS arranged with the National Bureau of Standards to make tests of a large number of aluminum alloys and galvanized steel sheets in contact with wet grain and various commonly used fumigants. The findings of the National Bureau of Standards are given in a report Effect of Various Fumigants and Wet Corn on Aluminum Grain Bin Materials, under date of July 21, 1952. The section also arranged for tests by the National Bureau of Standards of 14 combinations of 3 primer and 3 finish paints for use on metal bins. The findings of the National Bureau of Standards on these protective coatings are included in a report Examination of Paints for Metal Grain Bins, Laboratory No. 511z/540 and 541, test No. G8933, dated February 27, 1952. Copies of these reports were submitted to PMA.

The Farm Buildings Section, ARS, also recommended certain remedial measures as indicated in the following extract from a memo to W. H. Kennecy, Assistant Chief, Storage and Maintenance Division, T. & W. Branch, PMA, under date of March 15, 1951: "We understand that bins now storing insect-infested grain are or will in the near future be emptied for proper disposition or treatment of the grain and to facilitate repair and protection of the bins.

Before refilling the emptied bins we suggest the following steps be taken to make bins weathertight:

(1) Replace missing washers, nuts, and bolts.

(2) Tighten all loose bolts.

(3) Calk with a pliable compound around openings in roof and wall as needed.

(4) Cover all vertical wall joints on the exterior side with a cocoon type material (exterior grade).

(5) Make certain that the floor is properly spaced. Cover joints between floor and wall, if necessary, with strips of roll roofing.

(6) Provide proper surface drainage around bin and make certain the grade is at least 6 inches below floor level.

Bins that have been damaged by corrosion but are still in a useful condition should be given a protective coating on the inside. Pending results from the laboratory studies we suggest the following paints be tried in the field:

(*a*) Primer: Zinc, dust-oxide, Federal Specifications TT–P–641. Drying time, 24 hours. Finish coat: "Liquid envelop" permanent ?lear No. 3178 by the Better Finishes and Coatings, Inc., 268 Doremus Avenue, Newark 5, N. J., or similar. Drying time, 2 hours.

(*b*) 2 coats of asphalt varnish, Federal Specifications TT–V–51A. Drying time, 24 hours.

Mr. MARSHALL. But I would like to pursue a moment this calking material. You have done considerable work on calking material, have you not?

Dr. MCKIBBEN. I believe so; at least I know we have prepared definite specifications for the calking material on some of the contracts.

Mr. MARSHALL. What do you do with those specifications? Where do they go?

Dr. MCKIBBEN. It is my understanding that our responsibility in that connection has been to supply those specifications to the interested agencies who then make their decision.

Mr. MARSHALL. What use, if any, do they make of your specifications? Do you have any other information along that line?

Dr. MCKIBBEN. I do not have detailed information. In most instances, our general specifications have been rather closely followed, but I cannot speak specifically of the details since that is not our responsibility.

Mr. MARSHALL. In your administrative and supervisory efforts, have you made any followup to see what the effect of your recommendations have been in the use of calking materials?

Dr. MCKIBBEN. Our men have visited bin sites under two different kinds of circumstances. Sometimes as a matter of adding to their own information and knowledge of how construction details are working out. In other cases, as consultants where there have been failures or apparent failures in some of the materials contracted for. Our men, particularly Mr. Molander, have been asked by Commodity Stabilization Service to visit the bin sites and consult with representatives of the State agricultural stabilization and conservation committees, and thus be of help to Commodity Stabilization Service in trying to determine the causes for failure, whether it was failure to meet specifications or an unforeseen circumstance that developed and caused the difficulty.

Mr. MARSHALL. Are you aware of any instance where your instructions on the use of calking materials were followed that there was any failure of those calking materials to live up to those specifications?

Dr. MCKIBBEN. Where our specifications were followed?

Mr. MARSHALL. Yes.

Dr. MCKIBBEN. I am not.

Mr. MARSHALL. Complaint has come from use of calking materials where your instructions were not followed?

Dr. MCKIBBEN. To the best of my knowledge, that is the case.

Mr. MARSHALL. Are you getting funds this year from CCC to supplement these funds you are appearing before us today in connection with?

Dr. MCKIBBEN. To the best of my knowledge, there has been no decision for fiscal year 1956.

Mr. MARSHALL. I have one other question in connection with this. In the land-grant colleges, is there any duplication between land-grant colleges and different States on the experiments that they are carrying on with the use of calking materials?

Dr. MCKIBBEN. I would say not because of the fact that we are supervising this work and what might appear to be similar work

at different colleges is in the nature of replication. It is set up in such a way that the results in the two places can be compared. My viewpoint in regard to the concern about duplication is that I think where we may be criticized is where we do the same thing at two different locations and fail to compare and correlate the work. That is the object of the grant of $6,000 we have for expenses and for part of one man's time for supervision.

Dr. JOHNSON. Of course, the atmospheric conditions and climatic conditions are different in the areas that Dr. McKibben mentioned.

CCC FUNDS USED FOR GRAIN STORAGE RESEARCH AND CONSULTATION

Mr. MARSHALL. Not only last year but over the years the Commodity Credit Corporation has spent considerable money on this research item. Could you put in the record the total amount that you received on a reimbursement basis to land-grant colleges in your group from Commodity Credit for carrying on the research on bin structure and the work related to it?

Dr. MCKIBBEN. I will be glad to do that. But I might add that it is my belief that up to this year we have had none for research. I will check that. I think it has been mostly from the standpoint of consulting service and reimbursement for working out specifications and checking specifications of that type, but I will put a complete statement in the record.

Mr. MARSHALL. For my purposes you would not need to break it down. It would be as good if you put in your total amount of reimbursement of funds that you got from Commodity Credit regardless of what you got that for. I would not ask you to go to the work of breaking that down specifically on each item, but the total amount that you received.

(The information requested follows:)

Funds furnished the Farm Buildings Section, Agricultural Research Service, by Commodity Credit Corporation or Commodity Stabilization Service and its predecessor organizations

Fiscal year	Approximate amounts	Purpose
1942	14,900	Research and consulting services.
1943	15,000	Research.
1944	10,400	Do.
1945	5,500	Do.
1949	5,000	Consulting services.
1950	2,950	Do.
	23,635	Research.
1951	11,900	Research and consulting services.
1952	2,000	Consulting services.
1953	6,070	Research and consulting services—grain.
1954	235	Research and consulting services—peanuts.
	5,935	Research and consulting services.
	2,185	Consulting services—mothballed ships.
1955	44,000	Transferred to State experiment stations for grain storage research.
	6,000	Coordination of State research.
	[1] 5,000	Consulting services on Commodity Credit Corporation bins.

[1] Estimate.

The funds furnished in the period 1942 to 1945 were used mostly to conduct research on wheat storage at CCC bin sites at Hutchinson, Kans. and Jamestown, N. Dak.; and on corn storage at CCC bin sites in Iowa, Illinois, and Minnesota.

USDA Circular 826, Storage of Dry Shelled Corn in Farm-type Bins and USDA Technical Bulletin 1113, Wheat Storage Research at Hutchison, Kans.

and Jamestown, N. Dak. (in press), are complete reports of this work. Mimeographed progress reports were furnished CSS periodically, and the following publications used data resulting from this research:

Farmers' Bulletin 2009, Storage of Small Grains and Shelled Corn on the Farm.

Farmers' Bulletin 2010, Storage of Ear Corn on the Farm.

Farmers' Bulletin 2071, You Can Store Grain Safely on the Farm.

The funds received from CSS in 1949 were for consulting services, including preparation of specifications for grain bin purchases, advice on designs submitted by manufacturers and field inspections of bins.

Funds received in 1950 and 1951 were mostly for conduct of research on aeration of grain stored at CCC grain sites. A mimeograph publications for administrative use, Improved Methods of Storing and Handling Shelled Corn in CCC Bins was prepared cooperatively as a result of this research. Specifications were prepared for fans, motors and ventilating ducts for use in bin site structures.

Funds received in 1953 were largely for studies of aeration of bins at CCC bin sites.

Funds received in 1954 covered continuation of research work on aeration of bins and a considerable amount of consulting and service work in setting up aeration systems for moth-balled ships used for storage of wheat. This work included preparation of specifications for fans, motors and ventilating ducts. Since the spring of 1954, the Farm Buildings Section, ARS, has had no connection with the storage program in the moth-balled fleet.

BUDGET FOR SILAGE RESEARCH

Mr. VURSELL. Dr. Johnson, can you tell me how much was appropriated last year? I do not have the figures, being new on the committee. How much was appropriated last year for research on this silage problem?

Dr. JOHNSON. Yes, we are using during the current year, which would be last year's appropriation, $6,000 on a small pilot job, you might say, at Beltsville.

Mr. VURSELL. Is that the first research you have made on that?

Dr. MCKIBBEN. It has been going on at that level for 2 or 3 years. It has been a matter of cooperating with the Dairy Branch and we have used this small amount in order to try to keep up our part, the engineering part, of the research on silage. This request is a part of a bigger program, as you will note, on forage and silage research.

Mr. VURSELL. I notice you ask for $50,000. I was interested to know how much of a study you had already made. The reason I raised the question is that for the past 20 or 25 years through the Farm Bureau Federation, particularly in my State of Illinois, and the interest of the farmers in the management of their own business, it seems they have been taking care of the silage proposition in pretty good shape. However, according to your argument here, it would seem that probably you are coming to more or less of a new phase of putting up green grass which might be of considerable importance. Then I notice you come to the fact of these trench silos. I owned a farm 15 years ago that had a trench silo on it. It would seem to me that the average intelligence of the farmers and the strides forward that have been made in my section of the State of Illinois, that it would not require a great deal of help, a great deal of engineering study and research to have that job well enough along that with their intelligence and with their farm bureau organizations, their meetings that they have constantly, that they can take care of that problem themselves.

Dr. JOHNSON. I would like to say this. Trench silos, of course, have been used a long while, but the horizontal, above-ground silo that is sometimes called the bunker silo where they put up planks or concrete above ground and fill with silage horizontally is a relatively new development. These bunker silos are filled either with chopped grass or long grass, and then arranged for self-feeding. There has been quite a lot of that, Mr. Vursell, in your area in the last 2 to 3 years, but not very much of it in the East nor the Southeast nor the Great Plains. It is in those areas that we are planning to make this study, because there seems to be the greatest need in those areas. We would utilize all of the information that farmers and other research people have developed and put that together, using that experience in developing information for these other areas where the bunker silo and the use of grass silage is relatively new.

FARM ELECTRIFICATION RESEARCH

Mr. ANDERSEN. Mr. Chairman, I have a question, if I may ask it, please. What strides have you made, Dr. Johnson, in electrical research on the farm? First I might ask, what are you requesting for that this year? I have the figures here before me but let us put them into the record.

Dr. JOHNSON. We are requesting $215,100.

Mr. ANDERSEN. How much did you have this fiscal year?

Dr. JOHNSON. We have the same amount this year, Mr. Andersen.

Mr. ANDERSEN. You are not asking for an increase in this particular segment? If not, why not?

Dr. JOHNSON. We are not asking for an increase this year. We feel that farm electrification research is tremendously important and we considered an increase but in view of the overall ceiling, that was one of the items that we had to hold over.

Mr. ANDERSEN. I think you agree with me, as you just stated that you consider it very important. I would think that farm electrification research is practically in its infancy at this time. I am just wondering if you people are not making a mistake in not asking for additional funds for this work. Did you personally ask for more money for it of the Department in requesting your budget allowance? You can say yes or no. It is up to you to answer.

Dr. JOHNSON. We discussed it within ARS.

Mr. ANDERSEN. What did the Department request of the Budget for farm electrification research?

Mr. BEACH. The Department requested $215,100, Mr. Chairman.

Mr. ANDERSEN. And the Budget allowed you what was requested?

Dr. JOHNSON. Yes, sir.

Mr. ANDERSEN. I would like to ask of you as to just what priority do you give to farm electrification research in your immediate field? Just how much importance do you attach to it? You can also answer that in the record, please, after you give a study of it.

I wish also at this point, Dr. Johnson, you would put in the record a detailed description of exactly what you have done in the last few years relative to this problem. I am assuming you will put the answers in the record.

Dr. JOHNSON. We will put the answers in.

(The information requested follows:)

Farm Electrification Research

Research on farm electrification was undertaken in July 1938. The first major change in funds available was in fiscal year 1943, when all but $4,600 was transferred to research on hemp, a critical war item. The remaining funds were used for egg cooling research. In fiscal year 1946, Congress provided an increase of $25,000 to develop and adapt electrical equipment and devices for income-producing uses on the farm. Additional funds were made available in fiscal year 1947 for research on the utilization of electric power on farms.

Funds under the Research and Marketing Act became available in fiscal year 1948, supplementing funds for production, utilization, and marketing research. These funds were later merged with appropriations to the respective agencies. Increases in farm electrification research were provided in fiscal years 1948–50 for such ARS projects as cold storage of perishable foods on farms, egg candling, bright-leaf tobacco curing, etc.

Under direct appropriations, Congress provided in fiscal year 1949 $5,200 to meet increased pay costs and $31,700 for investigation of electric equipment and its adaptibility to farm use. Farm electrification research was strengthened in fiscal years 1950 and 1951 by increases of $25,000 and $10,000, respectively. In fiscal year 1952, there were general reductions in all research appropriations. As shown in the accompanying table the amounts allotted to the Farm Electrification Section have remained rather constant since that time.

The activities of this section may be grouped under six headings: (1) Reduction of hand labor at farmsteads such as (*a*) automatic grinding, mixing, and delivery of feed to livestock, (*b*) easily movable electric fence equipment for rotation grazing, and (*c*) electrically operated equipment for reducing the labor in handling honey; (2) research on the possibilities of using electrical equipment to provide better environment for animals and plants, (*a*) light to increase fertility in turkey eggs, (*b*) infrared lamps for raising chicks and to save young pigs, (*c*) possible control of airborne poultry diseases with germicidal lamps, (*d*) maintaining optimum drinking-water temperatures for livestock, (*e*) possible beneficial effects of different forms and amounts of electrical energy on the germination and growth of seeds; (3) insect attraction by ultraviolet radiation and destruction in grain by high frequency dielectric heating; (4) conditioning farm crops, (*a*) tobacco curing, (*b*) dielectric heating; (5) farm refrigeration, (*a*) use of heat pumps for heating and cooling farmhouses, drying grain, and heating and cooling potato storage, (*b*) a package-type refrigerator unit for farm freezer coolers, and (*c*) farm egg cooling; (6) investigation of the amount of power used and the demand characteristics of electrified farmsteads.

In addition to the activity listed in the budget as "Farm electrification research," investigations on grain drying included in the activity listed in the budget as "Farm structures and related investigations" involve the use of electrically driven and controlled fans. About $25,000 is devoted to this closely related work.

Also, the Production Economics Research Branch has a small project on the economics of farm electrification. The budget for this project is about $7,500.

Farm Electrification Research Section, fiscal years 1939–55

Fiscal year:	*Agricultural engineering phases*	Fiscal year:	*Agricultural engineering phases*
1939	$32,000	1948	85,000
1940	33,100	1949	139,000
1941	33,700	1950	218,100
1942	25,000	1951	221,600
1943	4,600	1952	226,100
1944	4,600	1953	217,500
1945	6,000	1954	215,700
1946	32,600	1955	215,100
1947	68,900		

VENTILATION EQUIPMENT FOR GRAIN STORAGE IN MOTHBALL SHIPS

Mr. Marshall. It was determined that some fans and motor assemblies should be purchased to be used in the mothball fleet to protect the grain. Were you asked for your opinion as to the type of motor and fan assembly that should be used?

Dr. McKIBBEN. It is my recollection that our Farm Buildings Section was asked to supply that information.

Mr. MARSHALL. Dr. McKibben, if you prepared a specification for this item, would you submit that to the committee for review?

Dr. McKIBBEN. I will be glad to.

SPECIFICATIONS FOR CALKING COMPOUND

Mr. MARSHALL. Also, Dr. McKibben, we would desire that you place in the record your specifications on calking compound that was used on these grain bins.

Dr. McKIBBEN. I will be glad to.

(The specifications requested are as follows:)

The Farm Buildings Section, ARS recommendation to Commodity Stabilization Service on calking compound for grain bins was based on exposure tests by the Farm Buildings Section at the Agricultural Research Center, Beltsville, Md., and was worded as follows:

"Calking compound for grain bins shall have a noncuring polysulfide rubber base (equal to "Thiokol" and shall be similar in composition to Minnesota Mining & Manufacturing Co. sealer formula EC–612 (bulk) or EC–1126, extruded). Should be in extruded form—beads=3/16 inch φ or tapes 1 inch by 1/8 inch. Shall be guaranteed to retain adhesion and pliability for not less than 4 years at temperatures ranging from −20° to 120° F. Laboratory or field exposure records indicating such qualities shall be submitted."

The first sentence of this recommendation was omitted in the specifications used in the purchase of grain bins by CCC to permit submission of other materials that might perform satisfactorily. Subsequently, two promising materials other than of Thiokol base have been tested at the request of the Farm Buildings Section, ARS, by the National Bureau of Standards. One of these was found to be satisfactory.

DATA ON FARM AND RELATED EMPLOYMENT

Mr. MARSHALL. Some time ago, Dr. Johnson, I saw some material from the Department showing the total number of persons employed during a recent period due to the needs of farmers, the production of farmers, and the handling and distribution of farm products. I wonder if these figures could be brought up to date. I have in mind specifically:

(*a*) The total number of persons employed.

(*b*) The number of these persons employed on farms.

(*c*) The number of these nonfarm workers employed in producing things that the farmer uses.

(*d*) The number of these nonfarm workers employed in the processing and distribution of farm products.

Dr. JOHNSON. We will be happy to supply that information for the record.

(The information requested follows:)

(*a*) Total number of persons employed: United States civilian employment, 1954 ..... 61, 000, 000

(*b*) Number of these persons employed on farms: United States employment on farms, 1954 ..... 8, 500, 000

(*c*) Number of nonfarm workers employed in producing things the farmer uses in production 6, 000, 000

(From PMA publication To Keep Your Plate Full, 1952. Rough estimate of number of nonfarm workers employed in providing raw materials, machines, equipment and other goods and services in agricultural production).

(*d*) Number of these nonfarm workers employed in the processing and distribution of farm products: Nonfarm workers employed in processing, transporting and distributing farm products, estimated as equivalent full-time workers 10, 000, 000

(Estimate for 1954, unpublished.)

Mr. MARSHALL. If I remember correctly the figures I have seen indicate that something like 40 percent of all the employed workers are involved in agriculture in one way or another. I think it would be very useful for the committee if this material could be presented for the record.

Dr. JOHNSON. We will do that.

(The information requested follows:)

United States civilian employment and employment on farms are in terms of persons working at certain times of the year. Available data on nonfarm workers in processing industries are stated in terms of full-time worker equivalent. Therefore actual number of nonfarm workers connected with agricultural processing and distribution is understated to a small extent. The proportion of all workers engaged in agricultural production and related processing, transportation and distribution, to total United States civilian employment is estimated to be about 40 percent.

RAW MATERIALS PRODUCTION AND CONSUMPTION OF CERTAIN GOODS BY AGRICULTURE

Mr. MARSHALL. Dr. Johnson, I would like to ask for some additional materials getting at the relative position of agriculture as a basic producer of goods, and the relative position of agriculture as a basic consumer of goods and services. Specifically, could you supply for the record the following: (*a*) What is the value of raw materials produced by agriculture compared with the value of all other raw materials produced; (*b*) How much fuel oil does agriculture use in a year? How much electric power do farmers as a whole consume in a year? How much raw rubber does agriculture as an industry consume in a year? How much steel does agriculture use in a year's time? Any other material along this line would be appreciated.

Dr. JOHNSON. We will place that in the record.

(The information requested follows:)

(*a*) RAW MATERIALS PRODUCTION IN THE UNITED STATES 1950 (IN TERMS OF 1935-39 DOLLARS)

Total raw materials, United States (including Alaska): $18,965.5 millions
Agricultural materials, United States (excluding Alaska): $12,439.1 millions or 66 percent of total

(*b*) ANNUAL USE BY AGRICULTURE

Motor fuel, 1952: 10.5 billion gallons
All farm uses including household. Includes LP–gas. Farm use is about 10 percent of total United States consumption.
Electric power, 1953: 19.5 billion kilowatt-hours
Includes use in farm homes. Farm use is about 5 percent of total United States consumption.
Raw rubber, yearly estimate at present level: 320 million pounds
Farm use is about 9 percent of total United States consumption.
Steel use for farm purposes, estimated level for recent years: 7 million tons
Excludes steel used for home use, processing plants and containers. Farm use is about 10 percent of total United States consumption.

Source: Table 1, p. 176, Report of the President's Materials Policy Commission, W. S. Paley, Chairman, June 1952. Resources for Freedom, 83d Cong., 2d sess. H. Doc. 527, vol. 2.

Mr. MARSHALL. Dr. Johnson, I may have asked you this before, and you may have told me the information is not available. But I am going to ask again if anyone has figured out the number, or the approximate number, of man-hours of nonfarm labor that go into a year's production of farm goods. I am sure you know what I am

getting at. We talk, and properly so, about the number of workers on farms and the efficiency of agriculture. At the same time, we know that a part of that increased efficiency is the result of work in factories that goes into the making of various farm machines and other equipment which enable farmers to produce more with less actual farm labor. What I am trying to get at is some way of measuring that.

Dr. JOHNSON. We do not have adequate information to permit making this estimate.

PRODUCTION ECONOMICS RESEARCH

Mr. MARSHALL. You also are going to justify an additional increase of $100,000 for "Production economics research"?

Dr. JOHNSON. That is right. Would you like for me to say a word of explanation before I get to the increase?

Mr. MARSHALL. Would you make an explanation of the work you are doing in this particular section?

ECONOMICS STATISTICS OF PRODUCTION

Dr. JOHNSON. The work, Mr. Marshall, is of two types. First, development and maintenance of statistical series which measure changes taking place in farming. That is, the economic statistics of production.

RESEARCH ON ECONOMIC PROBLEMS OF PRODUCTION

And then, second, the research on economic problems of production, which, of course, involves dollars and cents appraisal of the problems that are facing farmers and agriculture generally.

This is the only group in the Department doing research on economic problems of production and the large extension and action programs in the production field come to this group seeking information on economic aspects of production problems. This means that a good deal of time is taken up with service work, and very frequently we are caught short because we do not have adequate research information to service action programs and other agencies.

MAINTENANCE OF AGRICULTURAL STATISTICAL SERIES

I want to say that those statistical series on current changes are developed from the research materials and are an essential part of research. The same people do both types of work. But those series, such as the chart discussed a while ago, portray the trouble spots in the economic situation and where they are likely to develop. Some of these series such as taxes and interest rates are part of the parity price index.

I understand that Mr. Wells has discussed with you the economic situation and in doing that he has used some of the statistical series that are developed in this branch along with those developed in the Marketing Service, so I will not take much of your time on them. He probably showed the charts on land values and the farm balance sheet, for example.

I will turn now to the research in this field. As I said a little while ago, it involves a dollars-and-cents appraisal of production problems. Putting it another way, trying to answer the question, will it pay? Will it pay to use more fertilizer; to buy a mechanical cottonpicker; to install a sprinkler irrigation system; and the question we just discussed, Will it pay the farmer to shift more of his land to grass, into permanent cover?

Now, if the farmer is to shift in any way, make changes in his farming, it usually requires additional investment. If it is a small farmer in the Southeast—for example, cotton farmer or tobacco farmer, the question of where he is going to get those funds, the credit needs and the operating expenses, and the net returns that he can expect from such changes, and when he can expect them, become tremendously important in determining whether the change can be made.

Very frequently it means that the income is reduced while he is making the shift and the question is how he can tide over that period. Those are economic research problems in production that arise in the different areas.

FARM BUSINESS AND ADJUSTMENT RESEARCH

I want to discuss especially the farm business and adjustment research because that is the field in which we are asking for increases. When we determine how these changes in farming are likely to pay out in different areas, we provide the binder, the cement that ties together the research in the other fields—the soils, crops, livestock and engineering research. It is all tied together into the prospective costs and returns for the farm as a whole in a way that makes the results directly useable to farmers, to vocational agriculture, to extension workers, to soil conservation and other workers who assist farmers on their production problems.

I might just illustrate the results with a little chart here from a study we just completed in the Louisiana rice area. As you folks know, there is going to be a rice allotment this year. I think the average acreage reduction called for is about 25 percent. This study was completed by one of the Production Economics Research men, working in cooperation with Louisiana and stationed there. The chart shows only the net results of the study, that is, the estimated returns to land and operators' labor and management for 5 systems of rice farming at 2 different prices for rice—at $7 a barrel and at $5.75 a barrel. And by the way, these farming systems involve pasture and beef cattle, with beef prices at 15 cents a pound for all the systems compared.

The prevailing system in this area is 1 year of rice and 1 year of native pasture. The first two vertical bars show the prospective returns from that system. Then you go to 1 year of rice and 1 year of lespedeza pasture, 2 years of rice and 3 years temporary pasture, 2 years of rice and 3 years of improved pasture, and 2 years of rice and 4 years of improved pasture. As the pasture acreage is increased in relation to the rice acreage, the income goes up except for the system with 4 years of pasture. The yields of rice will increase after you have utilized the land in improved pasture and lengthened out the rotation, and more beef is produced.

The time involved in lengthening the rotation is extremely important especially for beef because the market is expanding overtime.

One further step, in addition to this, is needed. The results from studies in local areas of this type need to be tied together so that you get the picture for rice production as a whole. If you are dealing with cotton, all of the major cotton areas need to be studied so that you can compare the returns in the different areas, and so that you can estimate how these changes are likely to affect the production that comes to market. Only in that way can you really come back to the farmers with sound information as to what the prospects are likely to be.

I might illustrate it in this way, the cotton farmers in Mississippi and North Carolina at the present time are probably more interested in what is happening to cotton production in California than they are in what is happening to cotton production within their own State.

It is that tying together of the information, working with local people area by area, and then tying the results together that to me furnishes the really fine opportunity for cooperation between the land-grant colleges and other local agencies and research in the Department of Agriculture.

In other words, we are primarily interested in the interstate, the regional, and the national problems, but in order to tackle those, we have to have the roots in the earth, so to speak, in the local areas. State workers need the national interpretation in order to fully inform their farmers as to what the situation is likely to be. The soil conservation workers in the local areas likewise need that type of information.

COST REDUCTION RESEARCH

Now, I want to discuss another phase of research in this field, the cost-reduction research. In the price-cost squeeze that farmers are in at the present time, a dollar saved is a dollar earned. That becomes tremendously important to the individual farmer. I want to refer for a moment to cost-reduction work in dairying which I believe I mentioned last year. We do have some completed work on that which I think you will be interested in. The big items of cost in dairying are feed and labor, roughly, feed, 50 percent of the total cost, and labor, 25 percent. I am going to concentrate on the labor and the investment items because I want to mention the research contract with the Doane Agricultural Service which has just been completed to test out on actual farms, ways of reducing the cost of shelter, equipment, and labor, and still produce high-quality grade A milk. This work was done, by the way, in the Illinois area of the St. Louis milkshed.

STUDY OF MILK-PRODUCTION COSTS

These results are from actual farms where they tested out the new types of shelter and labor-saving equipment. The results indicate that on a farm with 20 to 25 cows you would save at least 1,000 hours of labor per year. You can put your own value on that. It depends upon what opportunity a farmer has to use his labor, but it is tremendously important to the farmer who has to hire labor and a good many of them do. It is important also to the farmer who is doing

his own work. Actually the labor requirements were cut in half compared with the farms where the usual or prevailing system of shelter and equipment was used and grade A milk was produced. The investment costs also were about cut in half that is, if new construction was needed.

INCREASE FOR RESEARCH TO AID FARMERS ON FARM BUSINESS AND ADJUSTMENT PROBLEMS

Turning specifically to the increase then, we would plan to do these two types of work, that is, the farm business and farm adjustment work that I previously mentioned and the cost reduction research where there seem to be real opportunities for reducing costs. The increase involves $100,000 and 18 man-years, to aid farmers on farm business and adjustment problems.

We would concentrate on the farm management and business problems that farmers in different areas face in adjusting to changes in price-cost relationships, in prospective market outlets and in new technology.

Mr. ANDERSEN. How much have you been expending on that same line of work?

Dr. JOHNSON. $270,000.

Mr. ANDERSEN. Do you propose to increase it?

Dr. JOHNSON. We propose an increase of $100,000.

Mr. ANDERSEN. How many years of similar line of work has been going on in the various land-grant colleges of the United States?

Dr. JOHNSON. Similar lines of work have been going on, of course, over several years but not pointed directly to the problems that farmers are facing at the present time.

Mr. ANDERSEN. I can recall 35 years ago seeing articles in farm magazines how to save on labor, how to fix up our farm buildings to save steps here and there. That was quite a favorite source of articles that we would see in the various farm papers. Have you got any new developments coming up that represent a great saving to the farmers of our Nation?

Dr. JOHNSON. Yes. The new structures that were built on this contract project and the pipeline milker, the cooling equipment to go with it, the arrangement of the buildings. We actually made time studies on these test farms. The comparison was 60 hours of labor per cow on the average on the farms that used the new developments compared with 120, on some grade A farms where we also had records that were using the prevailing system.

Mr. ANDERSEN. You must have made the studies on farms which were quite backward.

Dr. JOHNSON. No; they were not backward, Mr. Andersen, they were grade A dairy farms in the St. Louis milkshed.

Mr. ANDERSEN. I still insist that there must have been some new radical change in the way of performing the chores to justify any such increase as you mentioned.

Dr. JOHNSON. That is right. This involves what is called loose housing or pen type barns and milking parlors with preparation stalls and a convenient milk room and pipeline running from the milker to the cooler.

Mr. ANDERSEN. I have seen a pipeline running from the milker to the cooler 30 years back in my area. That is nothing new.

Dr. JOHNSON. The combination tried out on these farms Mr. Andersen, is quite new.

RESEARCH CONTRACT WITH DOANE AGRICULTURAL SERVICE

Mr. MARSHALL. What did I understand you to say that your contract with the Doane Agricultural Service had cost you, Doctor?

Dr. JOHNSON. Do you have the cost figures on that. The first item was $50,000, I believe.

Mr. HEISIG. The payment on the first phase was $49,000.

Dr. JOHNSON. And then $22,000 for additional work on farms with small herds.

Mr. MARSHALL. We have had in our land-grant colleges, we have had farm management work, we have had county agents who have promoted farm management work on farms. We have had experiments carried out and yet it was necessary in order to get good cost figures to go outside to a private concern in order to get some figures that you could use that would show you what could be done.

Dr. JOHNSON. At the same time that we were doing this we were also cooperating with Michigan State College and New Hampshire and Connecticut in New England on cost reduction research in dairying.

Mr. MARSHALL. Did you find any difference in your relationships in these different States where the farms of the Doane Agricultural Service were providing you assistance?

Dr. JOHNSON. Yes, this test on actual farms has developed a more efficient combination especially suited for that area.

Mr. MARSHALL. I don't dispute that, Dr. Johnson, but you have the Farmers' Home Administration, you have the Farm Credit Administration, that work directly with borrowers, you have the county agent working directly with people in the counties. You have the vocational agricultural people that are doing that and yet, in order to get the information that you needed on these particular things, you had to go outside of those sources to enter into a contract with a private concern. Is that what you are saying?

Dr. JOHNSON. That is right. The agencies that you mention are not research agencies. They do not collect research information, and in order to get accurate measurements and time studies and to try this new combination of structures, equipment and labor-saving devices, it was necessary to enter into agreements with actual farmers to try out the new system.

Mr. MARSHALL. At a cost of approximately $50,000, about half of the increase that you are asking for, for this work?

Dr. JOHNSON. That is right.

Mr. HEISIG. I might make one supplementary comment, that the project was developed, as I recall, within the framework of the questions being raised—whether or not certain types of structures and equipment specified in some fluid milk market regulations were necessary to produce high quality milk or whether, it was possible to get lower costs and still comply with regulations—whether you could produce high quality milk with these lower cost structures and facilities.

This was a test primarily designed to determine whether you could or could not maintain high quality milk with these low-cost structures. It was decided that the only way to do that was to make tests on specific farms and see whether or not it would work.

Mr. MARSHALL. I don't dispute the value of testing this on individual farms, but frankly, it amazes me that you have to go to someone outside of the Department of Agriculture to get it. It seems to me that that is the part that surprises me because it seems to me that you have had so many places right within the Department where you could get that without spending $50,000 additional on this particular item. That is what amazes me.

Mr. WHEELER. Mr. Marshall, could I say something generally on these contracts?

Mr. MARSHALL. We will be very glad to have you do it.

RESEARCH CONTRACTS IN THE DEPARTMENT

Mr. WHEELER. Questions have been raised here and at several other times about these contracts. You understand, I believe, that all of the subject matter covered by these contracts is work that is the responsibility of the particular agency of the Department to carry out and for which funds have been appropriated to them to carry out. Under the authority of the Research and Marketing Act, some segments of that work can be more economically performed by contract. As a matter of fact, there is written into the appropriation act each year a floor, a dollar amount, a minimum amount which we must spend by contract, in these various lines of work. But nevertheless, under the act itself, and our regulations, none of this subject matter which we could go ahead and do directly in the Department, can be contracted out unless there is a finding that there is a capable organization, either private or public that can do the same work with the essential standards and more cheaply than the Department could do it. So, it is not a question of delegating the work to someone else through these contracts. Rather, it is a means of getting work done which we have justified from the standpoint of the subject matter—doing it by means of contract rather than by direct employment in the Department.

Mr. ANDERSEN. Mr. Wheeler, why can you not find that money in the regular appropriation, laying aside the question of whether or not it is wise to contract? Why do you need additional funds on a continuing project of this nature? This does not only apply to this particular division, but you are a good man of whom to ask that question.

Mr. WHEELER. That is a different question and the only way I know to arrive at the answer is the way you are doing it right here in the hearings; that is, to weigh and evaluate present work as best that can be done, compared with the work that we are not now doing but which we feel should be done and for which we are asking money, and thus determine whether those values come out to the place where the new work should be done. And whether it should be done at the expense of dropping other work or whether the present work is so important that the new work should be done only by adding funds. That is the essence of making these budgetary determinations all along the line, weighing the importance of doing work, the importance of work that is not being done, and seeing how you come out with that comparison.

CONSIDERATIONS INVOLVED IN CONTRACT WITH DOANE AGRICULTURAL SERVICE

Mr. MARSHALL. I am not questioning the legal authority of your doing this. Again, as I said to Dr. Johnson, it amazes me that, with all of the groups that we have in Agriculture, on a particular item like this, it was necessary to go outside the Department of Agriculture to get information that I thought was on the fingertips of most every department working in the field in Agriculture. That is my question. I still have not had an answer to that question. From the standpoint of practical commonsense, in getting this information. Why was it necessary to do that? That is the question I am asking. Are land-grant college groups incapable of getting that type of information for you. Is that it?

Dr. JOHNSON. They have been getting information, of course, and we have been getting information. This, Mr. Marshall, was a job of putting pieces of improved practices together into a combination, a low-cost combination on these farms. It seemed that the best way to do that was to contract the work with an agency that could go out and get agreements with farmers who were willing to install these new shelters and equipment and then keep records on them to test it out in that way. I should mention that the work was planned cooperatively with the University of Illinois, the University of Missouri, with our own people, the Public Health Service and with milk inspectors in the State of Illinois. It was discussed thoroughly before it was started. These groups discussed it from time to time, as it was going along and visited the farms where the work was done. A good many private agencies contributed to the work in order to facilitate it. For example, the Pet Milk Co. did all of the milk testing in their own laboratory, free of charge. They were so much impressed with the results that they went out with an educational program of their own on these low-cost new developments. They are carrying out such a program within their territory to help farmers reduce costs.

PROPOSED USE OF REQUESTED INCREASE IN 1955

Now to preceed with an explanation of the work we would do under the increase requested. It is not our thought to use all of this increase on cost-reduction work, perhaps only a small part of it.

Mr. ANDERSON. We realize that. You are speaking about $100,000?

Dr. JOHNSON. The increase is $100,000. Actually, most of these funds would be used in farm adjustment studies, and concentrated in the areas where some real changes in farming are needed. We do have a number of these studies under way utilizing the $270,000 of present funds. Some of them were started this last year. In the Great Plains, we have studies going in Montana, North Dakota, and Kansas where the wheat problem and the question of diverted acreage is really acute. We are studying a butterfat-producing area in Iowa. We are also working in two cotton areas.

The point is this: As I mentioned a while ago, if we are going to do our job—if we are going to analyze the kind of adjustment problem that we discussed a while ago—we have to have people stationed out in the field so that we can tie the cotton problem together for all major producing areas, and similarly tie together the problem in the different wheat areas.

We are very short of personnel for that work. There are 17 States where we have no field people stationed. We would plan to use most of these funds to station people out in those States to study areas where the problems need the greatest attention.

SUPPORT FOR PROPOSED RESEARCH

Let me say in that connection, that in the report on Soil Conservation Service material needs, which I mentioned yesterday in connection with the work of the Soil and Water Conservation Research Branch, they came up with an AA priority for both the watershed hydrology work, which I mentioned yesterday, and the type of work that we are requesting here.

If you would like, I can either read their statement, which is a couple of paragraphs, or insert it into the record.

Mr. MARSHALL. I think at this time it would be well to insert it in the record.

(The statement referred to follows:)

COSTS OF AND RETURNS FROM CONSERVATION FARMING SYSTEMS AND PRACTICES (PRIORITY AA)

Farmers need to know the prospective incomes from alternative systems of conservation farming. Farm planners need dependable information about costs and returns farmers may expect from the application and management of a complete soil and water conservation plan that is needed for the protection and improvement of land and water resources on the farm. This includes a need for information on costs and returns from the individual practices which make up the farm plan. Such practices include contouring and strip cropping, reseeding range, fertilization of crops and pastures, weed and brush control, and various methods used for irrigation and drainage. Returns should be measured in terms of pounds of meat, milk, wool, cotton, bushels of grain, tons of forage, days of pasture, cords of wood that may be expected from alternative practices and systems of conservation farming together with prospective prices so that farm income comparisons can be made.

To give maximum prediction value to the results, this research work should be done on the basis of specific groups of soils, land classes, and types of farming. Farmers and conservation technicians also need more definite information as to the types of rental agreements, financing arrangements, and other farm business matters which facilitate the adoption of conservation farming in different parts of the country.

Dr. JOHNSON. Similarly, the Production Economics Research Advisory Committee gave the highest priority to this type of work both last year and again this year.

I would like to insert a couple of paragraphs that they stated in the record but just reading the first short paragraph:

The committee again emphasizes the need to increase the resources devoted to production economics research, not only to help farmers make sound management decisions in the years just ahead, but to provide economic data to promote intelligent longer time adjustments and devise effective public programs to help accomplish it.

Mr. MARSHALL. With no objection, the balance of that will be inserted in the record.

(The portion of the statement referred to follows:)

REPORT OF THE PRODUCTION ECONOMICS RESEARCH ADVISORY COMMITTEE (DECEMBER 8, 1954)

The central problem in production economics research is that of providing information to guide management decisions so they will achieve a pattern of agricultural production consistent with prospective market needs and efficient use of resources. Nearly all of the new or expanded work recommended covers interrelated aspects of this central problem. Some is aimed directly at giving farmers information on the prospective costs and returns and investment, credit and labor requirements of alternative farming systems, and on the economics of new practices or equipment. This kind of work is especially needed to provide Extension agents with research-based information for use in the new program of counselling on individual farm planning. The same information is needed in helping farmers work out soil conservation plans. Other recommendations aim at facilitating desirable adjustments by improvements in such things as credit arrangements, farm tenure, tax laws and procedures, water laws and public assistance programs.

Dr. JOHNSON. Similarly, the Grain Research Advisory Committee, meeting in Peoria recently, gave this type of research their highest priority. The Oil Seeds Committee, I understand, is especially worried about the soybean problem, that is, the possibility of further increase of soybean acreage, and they also recommended this type of research.

PROBLEMS OF SHIFTING SYSTEMS OF FARMING

Mr. ANDERSEN. That research has to do with how to produce more and better forage, so as to not utilize as much feed grain, is that not a fact? I think I read something of that nature there. You are trying to find means of lowering the cost of production of milk?

Dr. Johnson. We are trying to find means of lowering the cost of production of milk as well as other products. We are trying to find the best paying systems of farming in the different areas where changes are indicated.

Mr. ANDERSEN. Do you anticipate analyzing the effect upon the price of these same feed grains that you are trying to substitute forage for? What happens when there is less consumption of these same feed grains? Does that not depress the market for oats or barley, and so forth?

Dr. JOHNSON. Yes. That would be true taken by itself.

Mr. ANDERSEN. Then what do you do to counteract that possible effect in your research on the price of these feed grains which is of much interest to a big section of our country?

Dr. JOHNSON. That is the reason why we need to have Department of Agriculture people working with the State people, so that we can tie together the effects of the suggested changes on the market for all farm products. That works itself out somewhat like this, Mr. Andersen: We said a while ago that in the Great Plains country it takes at least 3 years to get a stand of grass. They have at the present time, a diverted-acres problem out there that is a big one. It is a tremendous problem, about 16 million acres for 1955 in the 10 Great Plains States. So it is a question of getting some kind of cover on that wheat land. That is a 3-year problem, trying to tie that into the long-time adjustment that may be needed out there.

If a farmer should shift some of that land, which is unsuited to crop production, looking at it over a period of time, that means grass and livestock. It means beef cattle, or possibly sheep. What kind of a system of farming would be most profitable with that kind of a shift? It won't happen tomorrow, but we need to have some answers available to farmers who have the problem of shifting the use of land.

Fortunately beef cattle and sheep are the best possibility of market expansion because of the increasing population—one of the best growing points in our market, but we do not have adequate research information on the profitableness of these kinds of shifts. I am just using that as one illustration.

LINE PROJECTS ON FARMERS' INCOME TAX

Mr. MARSHALL. Dr. Johnson, I would like to discuss with you some of your line projects. You have a line project study A–1–5–2, "Income Tax and the Farmer." Just what are you doing in that particular project?

Dr. JOHNSON. That is largely a statistical project. Very little effort is expended on it. It is an attempt to develop a series on the income taxes paid by farmers, and to provide information on income tax regulations as they affect farmers.

Mr. MARSHALL. Could you supply for the record the number of farmers that have been paying income tax and the amount of money they paid in income taxes in the last 5 years?

Dr. JOHNSON. We can supply the amount of money. We can supply an estimate of income taxes paid. As a matter of fact, I think I could look that up right here. If you want me to supply it for the record, I will do so. I do not believe we could supply the number of farmers.

Mr. MARSHALL. Will you put that in the record if it is available?

Dr. JOHNSON. Yes. I can put in the record the series on the income tax.

(The information requested follows:)

Federal income tax payments of the farm population, 1941–54 [1]

Year of payment:	*Taxes paid (million dollars)*	Year of payment—Continued	*Taxes paid (million dollars)*
1941	15	1948	1,395
1942	70	1949	900
1943	385	1950	815
1944	890	1951	855
1945	1,085	1952	1,145
1946	1,050	1953	1,400
1947	1,015	1954	1,340

[1] Payments based primarily on income of preceding year.

NOTE.—Estimates for years 1952, 1953, and 1954 are preliminary. However, the entire series is subject to revision as more adequate data become available.

Mr. MARSHALL. Dr. Johnson, when you make this study, as far as income taxes and the farmers are concerned, what use is made of it? What are you attempting to show with that kind of a study?

Dr. JOHNSON. We are attempting to determine the tax load of farmers. We are trying to get at the taxes levied on real estate, on other personal property, automotive taxes, and other taxes paid by

farmers to try to ascertain the tax load that farmers are carrying. It is part of the statistical work that I mentioned, to get the facts on the farm situation.

Mr. MARSHALL. How long have you been carrying on a study on this particular project?

Dr. JOHNSON. I would have to check on that. We can look that up and put it in the record.

(The information requested follows:)

This is a small project involving a limited amount of time each year. It was started in 1943, and provides one of the continuing series, along with estimates of property, personal, and other taxes, to reflect the tax burden borne by farmers.

Mr. MARSHALL. It seems to me that we are talking here about a matter of research. Isn't this collecting statistics rather than research? What can you do about it if you do find anything? Just where does research come into this particular item?

Dr. JOHNSON. Mr. Marshall, I would like to answer that in this way: In the beginning of my remarks on this branch, I said that the work was of two types. We do develop statistical series of current changes in farming, for example, on indebtedness, on land values and taxes to try to get the economic picture on the production side of agriculture.

STATISTICAL WORK OF PRODUCTION ECONOMICS BRANCH

Mr. MARSHALL. In order to get that, could you give me some estimate of the percentage of your work that is tied down to gathering statistics leading toward other research?

Dr. JOHNSON. Yes, sir. As I explained earlier, these statistical series almost entirely tie into other types of research. This one that you mention ties into the problem of trying to get the tax load of agriculture. We tried to determine about 3 years ago the approximate time spent on statistical studies. We estimated that about 25 percent of our resources at that time—about 25 percent of our funds went into statistical series.

Let me explain that some of these series are, by legislation, a part of the parity-price index. That is true of the interest rate series and the indebtedness series, of course, which is part of that. It is also true of the real estate and the property tax series.

LINE PROJECT ON BETTER WILLS AND INHERITENCE PRACTICES

Mr. MARSHALL. You have one over here, A–1–14–8. What are you doing in that kind of project?

Dr. JOHNSON. That project, "Better wills and inheritance practices," was started by request. So many requests came in from farmers and from extension specialists who were trying to help farm people in shifting their property from generation to generation. Again, it is a project which I think takes a small part of one man's time, he is doing this work along with other things.

Actually, what they are trying to work toward is a farmers' bulletin which will answer questions of that kind which come to the Department.

I personally would defend that as being very much of a worthwhile thing because farmers are not as well informed concerning the disposal

of their property from one generation to the next as they should be—as a matter of fact, none of us are.

Mr. MARSHALL. We have a long list of projects. The reason I am asking these questions is to try to find out what the project is about. It is not necessarily a question of finding fault with the project. It is a question of trying to find out the value of carrying on research work for those particular items.

Dr. JOHNSON. I realize that, Mr. Marshall. I appreciate it. I want to reply to your questions in that light.

NEW AND DISCONTINUED RESEARCH LINE PROJECTS

Mr. MARSHALL. You have done well. I appreciate that.

We are wondering what new projects you are attempting to start in this next year. You might state how many you dropped this past year, and how many do you intend to start new?

Dr. JOHNSON. During the present year?

Mr. MARSHALL. Yes.

Mr. HEISIG. On the matter of the number we have terminated during the past year, I did pick up some information on that.

Mr. MARSHALL. Will you place in the record the number and the name of the projects that you terminated in the past year?

(The information requested follows:)

LINE PROJECTS DISCONTINUED CALENDAR YEAR 1954 AND 1955 TO DATE

Number	*Title*
A–1–1–2	Relation of economic characteristics of agriculture to farm financial organization.
A–1–1–4	Capital requirements of agriculture.
A–1–5–7	Taxation in West Virginia.
A–1–10–8	Effect of oil development on land values and land ownership in North Dakota.
A–1–11–3	Assembly of basic data on water resources in the Missouri River Basin.
A–1–11–10	Economic and statistical assistance to USDA field committee for the Columbia River Basin.
A–1–11–13	Resource control and use in development of farms in a new irrigation area.
A–1–11–15	Selected economic problems in water resources development in South Dakota.
A–1–12–6	Land development and settlement in the Mississippi Delta.
A–1–12–8	Land resource utilization survey of Fluvanna County, Va.
A–1–13–8	Exploratory study of the economic aspects of water rights and irrigation in Michigan.
A–1–14–10	Study of rental arrangements in Southeast Piedmont.
A–1–14–12	A study of land ownership and use in relation to timber management in California.
A–1–14–16	Tenure problems in a highly specialized irrigation area (Colorado).
A–1–14–19	Study of problems and alternative methods of adjusting farm rents in the mobilization effort to changes in prices, costs, and production.
A–1–14–21	Farm tenure situation in the United States.
A–1–14–22	Analytical description of the land-tenure situation in the Southeast.
A–1–20–23	Farming adjustments in the Brown Loam area of Tennessee.
A–1–20–44	A study of factors affecting efficiency in the production of sugar beets and competing crops.
A–1–20–48	Economic aspects of sprinkler irrigation in the Pacific Northwest.
A–1–20–49	Economic analysis of present and possible farm organizations in the Sacramento Valley rice area.

Number	Title
A-1-22-9	Influence of improved technologies, methods, practices and other factors on size of farm and most profitable size of farm—selected tobacco type-of-farming areas.
A-1-24-7	Differential response in production by economic size and type of farm to variations in prices and yields.
A-1-28-7	Economics of cotton mechanization in California.
A-1-29-1	Economics of soil conservation in western Iowa.

Mr. MARSHALL. Then would you proceed to the new projects that you are intending to start this next year? Could you tell us about those?

Mr. HEISIG. We have been holding a series of meetings in our Branch to discuss the whole question of development of new work. It is a continuous process, of course.

When a project begins to come to an end in a particular location, we determine what is the next best thing to work on, as a matter of determining the most effective operations.

I do not have before me any listing of new projects. I know that we have a number and I could mention some examples.

For instance, we are planning on starting some new work down in Georgia, also in Kentucky, concerned with appraising some of the cost reduction and farming adjustment problems that are facing the farmers in those States.

We are just beginning to start work on a new costs and returns series in the cotton and peanut area of the Coastal Plains area, and so on.

Mr. MARSHALL. We appreciate some of your problems, but you appreciate the problems of this committee, too, in this regard.

How did you arrive at a figure of $100,000 if you did not have specific projects in mind?

METHOD OF ARRIVING AT AMOUNT OF BUDGET INCREASE

Mr. HEISIG. On our request for an increase, we have, of course, developed tentative plans for work. I think Dr. Johnson has the details of our estimate.

Dr. JOHNSON. If I might reply to that one, Mr. Marshall. We consider the type of work that should be done, its location and cost, that is for work that has been recommended to us by these advisory committees and by the Soil Conservation Service people, and other agencies. We do not actually establish line projects until funds are available because that means working up cooperative plans with the cooperators in the areas where we are working.

We did go through as carefully as we could to see where additional work was most needed. It runs like this: Some additional work on this adjustment problem in Alabama, in Arizona, in Arkansas, in Connecticut, some additional work in the small farm areas of Mississippi. We feel that we are doing very effective research in the delta area at the present time. We also would plan to work in Missouri, Ohio and the State of Washington. Some of the funds would be used in the District of Columbia to summarize and bring together the information from area studies.

Mr. MARSHALL. We are interested in another thing concerning your plan of work for the land-grant colleges. It must not be of too great

consequence, Dr. Johnson, because you merely copied your justifications of a year ago.

Dr. JOHNSON. Yes, the justification is similar to a year ago, Mr. Marshall. It involves additional work of the same type.

Mr. MARSHALL. Is there more need for it now than a year ago?

Dr. JOHNSON. There is more urgent need than ever. That is what the Production Economics Advisory Committee indicated. They were quite disappointed that additional support was not given.

Mr. MARSHALL. Dr. Johnson, we thank you for an excellent presentation as usual.

Dr. JOHNSON. It has been a pleasure. If I can help with further iformation, I want to do it.

Mr. ANDERSEN. I want to add that Dr. Johnson and Dr. Shaw and Dr. McKibben have made a fine presentation.

Dr. JOHNSON. Thank you very much.

FRIDAY, FEBRUARY 4, 1955.

LIVESTOCK RESEARCH

Mr. MARSHALL. We are pleased to have you before this committee, Dr. Reed. If you are ready to proceed with your general statement concerning livestock research, we will be glad to hear it.

Dr. REED. I have a few remarks that I have put down here, Mr. Chairman. It isn't as big as it looks. It will only take a few minutes.

Mr. Chairman, I am glad to have this opportunity to appear before your committee to discuss the budget requests for the livestock research program of the Agricultural Research Service.

IMPORTANCE OF LIVESTOCK RESEARCH

Most people recognize, I am sure, that ample supplies of meat, milk, eggs, and other livestock products are basic to our national well-being. A sound and thriving livestock agriculture is essential. Findings brought to light through skilled research help to make the livestock industry sound and thriving. Dependence on research has been growing during the past decade or two. All signs are that conditions in the next several decades will compel even greater dependence on research as our population increases and living standards go still higher.

The scientists in livestock research are concerned over the ability of our research program as it now stands to keep up with the times. Ranchers and farmers require much more scientific information than we are producing now if they are to improve efficiency of livestock production as quickly as needed.

The appropriation increases recommended by the Bureau of the Budget for the next fiscal year represent a reasonable amount, I believe, in view of the present situation, the needs we must fulfill, and the responsibilities in the future we must meet through livestock research. These responsibilities already are large. As members of this committee know, more than 57 percent of the total farm value of all agricultural products comes from livestock and poultry pro-

duction. It is a $19 billion business. How far it reaches and what it means to farmers is shown by a few comparisons.

Pennsylvania's annual egg crop brings in about the same amount of money to farmers as the annual orange crop of California and Florida combined. We don't think of Mississippi as being a dairy State especially, but the farm value of milk produced in Mississippi is about half that of the entire peach crop of the country. The farm value of meat animals, milk, poultry, and eggs produced in our country in the last 5 years has been 4 times as much as the wholesale value of all the automobiles manufactured during these years.

The production of livestock and poultry and their products is big business. Its output is big. Its need are big.

Production of meat, milk, poultry, or eggs must be ample, of course, but it also must be profitable for the producers. To be both ample and profitable, livestock production must be efficient. Livestock research in the Agricultural Research Service is dedicated to increasing that efficiency by constantly finding better ways and means of producing livestock and poultry and their products. Efficiency is relative. It never stands still. It keeps moving forward in commerce and industry. It has to keep moving forward in agriculture.

BROAD OBJECTIVES OF LIVESTOCK RESEARCH

If I may, I would like to state very briefly the three broad objectives toward which we are working and then sketch in a few highlights of what has been accomplished and where we are heading. More detailed explanations will be made by my associates in the research branches, Dr. R. E. Hodgson, Dr. T. C. Byerly, and Dr. B. T. Simms, who are here with me. The three broad objectives are: (1) Better bred animals; (2) better feeding and management practices; (3) better health.

Even small gains in any of these three areas can produce significant results. For example, if through better breeding and feeding of poultry, we could increase production of eggs by 2 per hen yearly, we could increase income according to our estimates by more than $20 million.

If better feeding practices would increase milk production per dairy cow by only 3 tablespoonfuls per day, the total value of milk produced would be increased by about $30 million.

Between 25 and 30 million pigs that are farrowed each year die before they reach market age. If, through research on diseases and feeding and care of pigs, only 2 million of these pigs could be saved, farmers would gain at least $30 million more income, it is estimated.

DAIRY CATTLE

As you know, all our principal breeds of dairy cattle—Jersey, Guernsey, Holstein, Ayrshire, and Brown Swiss—originated in Europe. Improved methods of selection and breeding—developed through research—have increased the efficiency of these purebreds, and they in turn have contributed immeasurably to the improvement in our commercial dairy cattle. The result is a 45-percent increase in average production per cow in the United States since 1910. The

average cow kept for milk production in 1910 produced 3,800 pounds of milk. In 1954, the average cow produced 5,500 pounds.

We believe with further research on feeding, breeding, and management that it will be possible in the next decade, when we are expecting this great increase in population, to produce all the milk that is needed and we will not have to increase the number of dairy cows that we are now milking. It is in the realm of possibility.

BEEF CATTLE BREEDING

Purebred beef cattle have likewise yielded to the breeder's skill, and we have outstanding Shorthorns, Angus, Herefords, and Zebus. Type, size, color, and conformation have been combined through selective breeding into superb individuals and families. During the past few years, several new composite breeds have been started. Among these are Santa Gertrudis, Brangus, Beefmaster, and Charbray, all of which were derived in part from the Zebu. The use of purebred sires from the better herds has helped considerably to improve our commercial beef herds.

Cooperative State-Federal breeding research has proved that rate of feed-lot gain, a major factor in determining profit in beef cattle production, is highly heritable and is independent of type, fleshing, breed, and conformation.

A cooperative project among 38 State stations and the United States Department of Agriculture is using about 10,000 breeding cows, chiefly purebreds, for the development and evaluation of lines for reproductive performance, rate of gain, type, fleshing, and other performance characters of economic importance in linebred, crossline, and crossbred matings. This broad subject is also developing and evaluating breeding methods based on individual and family performance so that our commercial breeders may have the information necessary to increase the efficiency of their beef herds.

Relatively speaking, breeding research with large animals is fairly new. Such research is a longtime undertaking and calls for large numbers of animals. It is an expensive proposition. The work that has been done, however, proves the value of this approach in developing more efficient beef and dairy animals.

SHEEP BREEDING

Increased efficiency in sheep production in the United States depends principally on the improvement of our fine-wooled Rambouillets for the range production of wool and feeder lambs, on the development of mutton breeds that combine well with the Rambouillet for the production of slaughter lambs, and on the breeding improvement of mutton breeds and crosses for farm sheep production.

The Department in cooperation with State agricultural experiment stations is engaged in all three types of research. Geniticists at the Western Sheep Breeding Laboratory have made major contributions to our knowledge of the inheritance of wool and lamb traits of economic importance and in the evaluation of selective breeding methods for the improvement of fleece weight and quality and lamb growth and quality. Thus far they have also developed two new breeds of sheep, the Columbia and the Targhee, which produce heavy fleeces and heavy lambs under favorable range and farm conditions.

SWINE BREEDING

The swine industry of the United States is now applying the results of 25 years' cooperative Federal-State research on the development of breeding methods that will produce large litters of pigs that grow fast, use feed efficiently, and produce meaty carcasses. This research has demonstrated that selective breeding can really produce meat-type hogs within any breed or combination. Cooperative Government-industry efforts are now directed toward the identification and use of breeding stock possessing these essential economic traits.

POULTRY BREEDING

Breeding for improvement in egg laying and in growth and feed efficiency of meat-type chickens and turkeys has increased productivity and efficiency by at least a third in the past 20 years. Equal improvement is anticipated in the next 20 years through the development and testing of new stocks and combinations by crossbreeding and hybridization. Select hybrids have demonstrated their ability to increase egg production and have been widely distributed among poultry breeders.

INFERTILITY AND REPRODUCTIVE FAILURE IN LIVESTOCK

One of the most important economic hazards in livestock production is infertility or the failure to reproduce. Much research has been done on this problem.

Cooperative work at Wisconsin showed that about 40 percent of all potential young in dairy cattle are lost through abortion or other difficulties 60 to 90 days after breeding. The loss from this cause alone is estimated to amount to more than $100 million annually.

The beef calf crop varies from about 55 percent on some of the native ranges of the Southeast to about 90 percent under favorable Corn Belt farm and Great Plains range conditions. Known diseases that contribute to reproductive failure include leptospirosis, brucellosis, vibriosis, and trichomoniasis. Other causes are phosphorus and vitamin A deficiencies, and protein deficiency, particularly during the drought and winter periods. Since 13 months normally elapse between calvings, a reproductive failure means the loss of a year's feed with no return. Feed cost of maintaining dry cows is estimated to be more than $50 million a year.

About 85 percent of the sows bred, farrow. Some of the failures to reproduce are caused by anatomical defects. Many more probably represent early death of embryos. Transmissible diseases such as brucellosis account for some losses. We know that nutritional deficiencies, especially protein and vitamin, affect the number of live births, but we do not know enough about the amounts of nutrients required for good reproduction. Feed wastage due to reproductive failure in swine is estimated to be more than $10 million annually.

Lamb crop varies widely from about 60 percent on sparse range to 150 percent or more under favorable farm conditions. More than 15 percent of ewes bred fail to reproduce. Nutrition and season are major factors affecting reproductive rate. Heritable differences in reproductive rate among breeds are high. Vibriosis is sporadically

disastrous. Loss from reproductive failure in sheep is more than $15 million annually.

Not less than 500 million checken eggs and 25 million turkey eggs, with an estimated value of $30 million, fail to hatch each year. We know that nurtition of the hen affects hatchability of her eggs. Vitamin D, riboflavin and vitamin B_{12} are especially important. The hen's environment, including temperature and day length, also affects egg fertility, and so do genetic characteristics such as lethals and egg size and shell quality.

ANIMAL NUTRITION

Recent advances in animal nutrition have helped farmers get higher production and at the same time save on feed costs. You are all familiar with the advantages that come from the use of antibiotics in poultry and pig feeds, for example, and research on the composition of forage is helping to determine livestock rations and to preserve nutrients through proper processing techniques.

There is still much to be done in this whole area of production, conservation, and utilization of forages for cattle. Large areas of this country are adapted only to production of forages of relatively low digestibility. Some of these forages are deficient in many respects, and all vary greatly in their nutritive value according to soil, rainfall, and temperature. Our methods for measuring utilization of pasture and range forage are tedious and imperfect. We know that forage plants increase in fiber and decrease in protein and phosphorus as they mature. Carotene declines steadily after maturity and during storage. In order to utilize low-grade forages most efficiently, we must learn more about their composition and what feed supplements are required to provide a balanced animal diet.

We are slowly learning what takes place in the cow's rumen and the part each kind of rumen bacteria plays in the digestion, nutrition, and physiology of the cow. Basic studies such as this also can help us to develop the most efficient rations and make our available feed supplies—particularly protein feed—go further, thus increasing the efficiency of our beef and dairy production for human food.

DISEASE LOSSES

According to a recent report on losses in agriculture published by the Department, annual losses from diseases of livestock and poultry amount to more than $2 billion a year. As our livestock industry grows, we find new diseases cropping up in cattle, sheep, hogs and poultry. Among those which have appeared more recently are bluetongue and scrapie in sheep and vibriosis in cattle. Recently, a new disease in turkeys and chickens has been brought to our attention. This disease, not known before or at least not recognized, is responsible for tremendous losses in poultry and turkeys. We are now making some exploratory investigations in a small way, but more information is needed if we are to check this disease before it becomes widespread in our flocks.

These and other new diseases, as well as the ones we have been living with, are a drain on our livestock agriculture. It has been estimated that 10 percent of our farm animals are lost from diseases and parasites.

Only through research can we find the means to reduce or eliminate these losses.

Mr. MARSHALL. Dr. Reed, that is a very fine statement. You commented about a turkey disease. How widespread is this?

Dr. REED. It is widespread in two States, Texas and California.

Mr. MARSHALL. Can you tell this committee where the disease came from?

Dr. REED. We call it ornithosis. It is somewhat associated with psittacosis which caused fever in parrots several years ago. It is different in many respects. We do not know just how fast it can spread yet. We know it has spread. We know there has been condemnation of the animals that were affected.

RELATION OF DISEASE RESEARCH TO CONTROL PROGRAMS

Mr. NATCHER. Mr. Chairman, may I interrupt? Dr. Reed, I was very much interested in the figure that you gave of $2-billion a-year loss to the farmers of this country as a result of animal disease. We all agree that your department, and you as Director of it have many accomplishments, Dr. Reed. I am just wondering how you justify now this proposal for the fiscal year 1956, a reduction there of $435,529, as far as plant and animal disease and pest control are concerned. Why a reduction as far as controls and an increase as far as research, generally, is concerned?

Dr. REED. That decrease, as I understand it, is in the regulatory work entirely. We have separated our disease research from our regulatory work. It is the same with plants. We have research on plants, and we have our regulatory work on plants. The reason for the reduction will be discussed later.

Mr. NATCHER. You agree $2 billion is a large amount of money as far as the loss to the farmer is concerned on disease generally?

Dr. REED. Yes.

Mr. NATCHER. You would further agree, Dr. Reed, we should have good controls, is that correct?

Dr. REED. I think we should have. Absolutely. As far as research is concerned, research backs up all control work. Without our research to lead the way, we would not have much of a program on control.

Mr. NATCHER. I believe, Dr. Reed, as Director, you have under your supervision livestock research in the Agricultural Research Service; is that correct?

Dr. REED. That is right.

Mr. NATCHER. Thank you, Doctor.

Mr. ANDERSEN. Dr. Reed, I have been interested once again in hearing you bring your report to the subcommittee. Very few people in this Nation realize the great value of the livestock and poultry in America. I think you mentioned the figure of $19 billion, did you not?

Dr. REED. Yes.

Mr. ANDERSEN. Are those figures for 1953?

Dr. REED. Yes.

Mr. HORAN. Who is going to testify on vibriosis?

Dr. REED. Dr. Simms.

Mr. MARSHALL. We will proceed with the dairy husbandry research item, showing a $150,000 increase.

Dr. REED. I will ask Dr. Hodgson, who is chief of the Dairy Husbandry Branch, to take over at this point.

DAIRY HUSBANDRY RESEARCH

Dr. HODGSON. I am very happy to be here with you to discuss the work of the Dairy Husbandry Branch and the proposed increase that we are asking in our budget this year.

A recent study indicated that of the dairy cows culled from DHIA herds, about 34 percent go out of the herds each year because of low production. They go out because they are not able to pay their owners a profit over their keep. This is the largest single reason for cows going out of dairy herds.

I think this illustrates the need that the dairy farmers have for research information on the breeding, feeding and improvement of dairy cattle. The research work that we have underway in our branch is directed entirely toward improving the efficiency of milk production and lowering the cost of milk production.

We think through increasing the production per cow that we can lower the cost of milk production and produce the required amount of milk that is needed in this country at lower cost with greater returns to the farmer and with possibly fewer cows than we are using at the present time.

To do this a broad and effective dairy cattle breeding research program is needed. The breeders of purebred cattle in this country have made great advances. They have contributed much to the improvement of the cattle to date. Many of these herds, however, are in existence for relatively short periods of time, and after the owners sell out or go out of the business of dairying, this germ plasm is scattered around and not too effectively used. Therefore, we need a continuing broad breeding research program, which will not only produce information regarding effective methods of breeding, for farmers to use, but also provide germ plasm for their use. The regional dairy cattle breeding projects established in cooperation with State agricultural experiment stations are one means of accomplishing this result. In this program we are establishing a potential bank of invaluable germ plasm for use in genetic research and in sustaining and expanding the program of artificial insemination.

The work that we have had underway for some years at Beltsville is a very good example of what research can do. We set out to demonstrate the value of the proved-sire method of breeding. Through seven generations of such breeding we have steadily increased production from 474 pounds of butterfat for the foundation cows to 672 pounds for the progeny of the seventh sire. The proved sire is the backbone of effective dairy cattle breeding throughout the country. This is illustrated by the fact that the artificial breeding associations are now using over 953 production-proved bulls in their studs. Most of these bulls were proved in our cooperative DHIA sire-proving program.

Another contribution we have made is the providing of sound information and recommendations as to effective methods of cross-breeding dairy cattle for the commercial dairyman who is interested in that type of breeding. Results indicate that we can take advantage

of hybrid vigor and get a big pickup in production by crossing, using again, well proved purebred bulls.

With the passage of the Research and Marketing Act, it was possible for us to extend the breeding research by taking up cooperative projects with some 10 State experiment stations.

These stations are scattered through the Midwest and the southern part of the country. In this cooperative research we are endeavoring to obtain information on the most effective systems of breeding to use, and to develop cattle that are particularly adapted to those particular areas.

An example of progress in one of the projects is the work in Wisconsin. We are comparing outbred daughters and inbred daughters of 6 lines of production-proved bulls. To date we have found that the outbred daughters on an average are 5 to 10 percent larger than the inbred, and they have produced almost 2,000 pounds more milk and 57 pounds more butterfat than did the inbreds.

Mr. ANDERSEN. On a project of that nature, when you feel convinced in your own mind that there is no question as to the value of the one against the other, do you then continue the project, or are you intending to set it aside as accomplished?

Dr. HODGSON. In this case only about 40 animals were compared——

Mr. ANDERSEN. You are not satisfied as yet?

Dr. HODGSON. This is not a sufficient number on which to base a conclusion. In addition to the straight comparison of outbreds and inbreds, we are developing highly inbred lines so that we can cross these lines to see whether or not this is an effective and efficient way to produce superior dairy cattle. When we are fixed in our minds that inbreeding, let us say, for example, is not an effective way to breed dairy cattle, we will discontinue it.

ARTIFICIAL INSEMINATION RESEARCH

Mr. ANDERSEN. You mentioned nine-hundred-odd proven sires being used by the artificial insemination associations.

Dr. HODGSON. 953 is the exact figure for 1954.

Mr. ANDERSEN. What is the average number of offspring from each of those proven sires through those associations each year?

Dr. HODGSON. I could not give it to you exactly for those proven sires. But for all bulls in artificial breeding the average is 1,865 cows bred per bull. It is the practice to use the services of proved bulls heavier than the nonproved bulls so they probably are above the average.

Mr. ANDERSEN. Thank you.

Dr. HODGSON. We do have a case on record where 1 bull has been mated to 75,000 cows through artificial insemenation. This illustrates the possible extent of the influence of good proven bulls.

Mr. MARSHALL. What has been your experience with proved sires as far as being able to take a certain length of time to prove a sire? How many years of useful life do they have on an average after you have them proved?

Dr. HODGSON. About as soon as we can prove a sire with present methods is when he is 5 to 5½ years of age. Bulls that are so proved and then go into artificial breeding studs last from 3 to 5 years on the

average. That is one of the problems in the artificial breeding program, to extend the useful life of bulls once we get them proved. There are surveys made that indicate that the average period of usefulness is between 3 to 5 years. It varies considerably with individual bulls.

PREDICTING PRODUCING ABILITY OF COWS FROM GROWTH OF UDDER IN THE CALF STAGE

We have talked to you before about the udder palpation work we have been doing.

Mr. MARSHALL. We were out to Beltsville and the committee was interested in the project.

Dr. HODGSON. We have tested this technique thoroughly in our herd. With the development of the regional breeding projects, we have extended that research into these experimental herds. We are now getting production information on animals in those projects, which is more or less of a field trial for this method of predicting the producing ability of cattle.

I would say that the results that we are obtaining in those projects have confirmed our results here. There are possibilities, we think, as we gain more data on this method, and it becomes more widely used, that we can get a good indication of the producing ability of a cow by palpating them when they are calves 4 or 5 months of age. Then we may not have to wait until they have finished a production record at about 3 years of age to get an idea of their producing ability. This technique may, therefore, be useful in selecting sires whose offspring have advanced udder development, an indication of high producing ability.

Mr. MARSHALL. Breeding associations are having a problem in finding approved sires, are they?

Dr. HODGSON. Yes, only about 36 percent of the bulls they are using are proved bulls.

The sire selection committees are going up and down the country hunting for proved bulls. It is a very great problem to them.

Mr. MARSHALL. Of that 36 percent that are proved sires, there are some of those that ought to be weeded out, are there not, Dr. Hodgson?

Dr. HODGSON. That is right.

Mr. MARSHALL. Just necessarily because an association has a proved sire is not, in itself, a final determinant that is the proper sire that that association should be using?

Dr. HODGSON. Some of the bulls that we have developed proofs on do not always turn out. One reason for that is that sometimes proofs are misleading, because we do not have the best type of information on them.

Mr. MARSHALL. So one of the greatest problems that a breeding association has at the present time is to get a sire that is suitable, and to get that sire as young in age as possible in order that they may have the longest potential use of that sire, right?

Dr. HODGSON. Another interesting point is that, at the present time the artificial breeding associations are using only about 25 percent of the semen produced by stud bulls. They are now taking up the use of frozen semen. You have all heard of frozen semen. It offers great possibilities for extending the use of semen and for increasing the

percentage of the semen produced that is actually used in breeding cows. In other words, where we are now using 25 percent of the available semen, we may be using in 2 or 3 years 100 percent.

Mr. ANDRESEN. It would seem to me that the utilization of these proved sires would tend toward giving purebred breeders an opportunity to secure a better price for their bulls which they produce for sale?

Dr. HODGSON. That is the case. Well-proved bulls are commanding a very good price at present and they are worth it, Mr. Andersen. Purebred breeders should, as you suggest, take the opportunity to develop good, sound proofs on their sires, and make them available to artificial breeding men.

INCREASED BUDGET FOR REGIONAL BREEDING RESEARCH

Part of the increase that we are asking is for the extension of cooperative research projects in the States, in connection with the regional breeding projects, both in the South and North Central States.

These projects were started in 1946. They have grown. There are more animals on the projects. They require more feed. They need additional help. The northeastern region presently is organizing a regional breeding project in that area. There are quite a number of States that have asked us to participate with them in their projects.

BUDGET INCREASE FOR RESEARCH ON INCREASING SOLIDS-NOT-FAT IN MILK

Another part of the increases, the most significant part, is for a new line of work that we have in mind, that is, work on the development of strains of cattle within the various breeds that have higher solids-not-fat in their milk in relation to the fat content. We think with the changing market conditions it is time that we were paying attention to developing a milk that is more in line with market demands.

There are good possibilities through breeding research of effecting an increase in the percentage of solids-not-fat—the protein and minerals, and so forth—that part of the milk which is so valuable from the standpoint of nutrition.

That type of work will fit right into existing breeding research. We need the services of specialists to do the milk analyses to guide us in breeding procedures.

We feel that is a very important line of work. The Dairy Advisory Committee the last 2 years has given it very high priority as needed research.

We would like to get research started on that important problem.

Some of that work would be done at Beltsville with our herd, and some in the regional breeding experiments in cooperation with State-experiment stations.

FEEDING AND NUTRITION RESEARCH

The second item of increase is for feeding and nutrition work. When we realize that feed accounts for about 48 percent of the cost of milk production, we are sure that improving the feeding and nutrition of our cattle offers great opportunity for lowering the cost of milk production.

Further, we believe that the way to do that is through greater emphasis on the home-grown forage supply.

Our research at Beltsville indicates that we can produce 100 pounds of digestible nutrients in forage crops for about 40 to 50 percent of what it costs to produce it in grains, such as wheat or corn. Our surveys tell us that dairy cows generally are consuming only about 75 percent as much forage as they normally would in an otherwise balanced ration.

The reason they are not consuming as much as they should is because it is not provided to them or it is of such poor quality that they will not consume up to their maximum abilities.

A recent survey in Wisconsin interested me greatly. It showed that more than 60 percent of the forage supply was classed below good; in other words, it was fair or poor in quality.

Along with that poor-quality forage is the fact, and the knowledge as we have developed it from research here at Beltsville, that important losses of feed nutrients have occurred during harvesting. When you make poor quality hay out of a good crop of alfalfa, you have lost a lot of feed nutrients. Our results at Beltsville indicate that when field-cured hay is made with alfalfa in this region, about 38 percent of the digestible nutrients and digestible protein is lost. When the same crop is made into silage, the losses are only about 18 to 20 percent. For that reason, we have been directing much of our research work toward ways of improving the methods for making grass.

Mr. ANDERSEN. As a little aside, Doctor, years ago in California I personally experimented with putting alfalfa into silos. We were troubled with getting the last crop of alfalfa put up because of rainy weather. I had a little corn silage near at hand, so I tried the experiment along the ratio of 3 loads of chopped-up alfalfa to 1 load of corn along with it to sweeten it. It turned out to be mighty fine feed. I just want to point out that 31 years ago I was experimenting with this very same thing.

Dr. HODGSON. That is right; and I also.

Mr. ANDERSEN. The experiment station at Davis pointed the way for me, by the way.

Dr. Hodgson. About the best we can do in making grass silage is to conserve 80 to 85 percent of the material we put in the silo. We think there are good possibilities through learning the basic bacteriological and chemical processes involved in fermentation, of further reducing that loss from 15 to 20 percent, down to, say, 10 percent. We would be saving a great amount of feed if we could make that saving in our methods of preserving grass silage.

In 1947, when we first made a progress report of some of our results on losses of feed nutrients due to harvesting and preservation only 1 percent of the silage made in the country was grass silage. Last year it was 22 percent. It shows you the shift that is taking place in the method of harvesting our forage crops. That shift is because of research that has been done, not only at Beltsville, but at many of the experimental stations in pointing out ways of making silage instead of hay.

Mr. VURSELL. When does grass silage cease to become grass silage and be hay? I would like to know more about what is grass silage. I come from southern Illinois. I haven't farmed for 12 years. I do not know much about this grass silage thing.

Dr. HODGSON. Grass silage is silage made from forages that are ordinarily made into hay. It may be alfalfa, it may be timothy, or orchard grass, or a mixture. The common term "grass silage" is accepted and used as a term for all such grasses that usually have been made into silage.

Mr. VURSELL. It is green stuff before it matures?

Dr. HODGSON. Green stuff put into one or another type of silo structure for preservation.

COOPERATIVE RESEARCH ON GRASS SILAGE

Mr. MARSHALL. While you are still on grass silage, we have under another item in this appropriation bill, under field crops research—they are carrying on work in connection with grass silage——

Dr. HODGSON. Was it in Agricultural Engineering?

Mr. MARSHALL. Yes. How is your work related to theirs?

Dr. HODGSON. We are working together with them on it. They do the engineering phases of the work. We grow the crops, do the job of filling the silos, do the chemical work and feeding work involved. We are working shoulder to shoulder on the problem.

Mr. MARSHALL. In connection with feeding beef cattle, and sheep, where is that done?

Dr. HODGSON. That is done in the Animal and Poultry Husbandry Research Branch. We are working with dairy cattle only.

Mr. MARSHALL. How many other places is this experimental work being carried on?

Dr. HODGSON. There are a number of experimental stations working on silage of different kinds throughout the country.

Mr. MARSHALL. Is the work in all places correlated? Is there duplication or not?

Dr. HODGSON. It is not correlated entirely by us. We are cooperating with a number of the stations but not all. As to duplication, sometimes duplication is a good thing. It has proven to be true in grass silage research. I know one station that developed a method of making grass silage, using a certain chemical, and they got quite a way off base on it. If someone else wasn't working on grass silage, we would still be quite a way off base.

Mr. MARSHALL. Do you find that the work you are doing with grass silage shows a much different result than that which is being carried on in Dr. Byerly's department with beef cattle?

Dr. BYERLY. The requirement for cattle in milk production is for the finest quality of material that goes into the silage and the finest quality of silage after it is done. Our requirements for stock beef cattle, especially, and even for feeder cattle, can utilize many of these cruder materials. We utilize the corn stalk in the beef cattle-feeding operation very well. We might use overmature grass. As a matter of fact, our principal interest is the utilization of this type of material. We will use only for comparative purposes the best quality of silage. We are much more interested in the fact that we will have to live with the quality of forage available. We are content to believe that our beef cattle and sheep will get the residual material and the dairy cattle get better material.

This is not duplication in any real sense, Mr. Chairman. We have to utilize all these qualities.

Dr. HODGSON. We are interested in grass silage because we believe the farmer can produce a higher quality, higher protein, higher energy feed that way than by making it into hay.

Part of the increase that we are asking for under this item will be for basic work on this problem of grass silage, that is, the bacteriological and chemical problems that are involved in the preservation of the forage. We know very little about the numbers, types, and kinds of bacteria involved, the end products that they produce which account for good silage or for poor silage. Some of these bacteria produce acid which makes strong, unpalatable silage—silage which sometimes gives the milk an off-flavor or odor. We need to learn how to process our material so that we can avoid that.

RESEARCH ON NET ENERGY VALUE OF FORAGE

Another thing that is needed is new research work on establishing the net energy value of forages. The usual way of expressing the nutritive effect of forage is by total digestible nutrients. The relation of total digestible nutrients and net energy in forages is quite different than it is with the grains. If you describe the energy value of a pound of corn grain in terms of total digestible nutrients, you are quite accurately expressing its net energy value.

If you do it with alfalfa hay you may be off 15 or 20 percent, or more.

Before we can do the job that we think should be done in feeding forages to dairy cattle, we need to know how to express our nutritive values in terms of net energy.

That is a problem that we think should be undertaken. It is a difficult problem. We think it is quite susceptible to solution and that it would pay big dividends in the end.

RUMEN NUTRITION RESEARCH

Another problem that we are working on is the bacteriological activity of the rumen. Dr. Reed, in his statement, mentioned that we are learning what is taking place in the rumen.

The role of rumen organisms in the digestion of forage is very important. We think, by learning more of what takes place, the organisms that are important, and what we can do to influence their activity, we will be able to increase the digestibility of these feeds so we can get more out of them.

These are the items we would like to place emphasis on in our feeding research because we are certain that the surest way for the dairy farmer to lower his cost of production and better feed his cattle is through a strong and vigorous forage production and utilization program.

DAIRY HERD IMPROVEMENT ASSOCIATION WORK

Now I should like to make a statement about our third line of work.

As you know, the DHIA work is a cooperative program with the 48-State extension services. During the last year the States have forwarded to our laboratory 667,064 lactation records of cows tested in DHIA herds. We developed sire provings on 5,912 sires. This is the largest number of records received and the largest number of sires proved for any year to date.

We have worked hard to improve our methods and to improve the character of the records used and the sire provings made. There is intense interest by breeders and dairymen in securing information on proved sires.

For the year 1953, the 1,226,588 cows in DHIA averaged to produce 9,253 pounds of milk and 368 pounds of fat. The average dairy cow produced 5,447 pounds of milk and 213 pounds of fat.

The artificial breeding business has grown to include 4,845,222 cows in 1953. There were 2,598 sires in studs and the average cows bred per sire were 1,865. One bull has been reported to have been mated to 75,000 cows in 1 year by this means.

We are not asking for increases in this work this year.

Mr. MARSHALL. Thank you, Doctor. That was a very splendid statement.

Mr. VURSELL. I have been interested in this gentleman's statement. I think it was fine.

Mr. ANDERSEN. I do want to say, Mr. Chairman, that I think we have had a splendid statement both from Dr. Reed and Dr. Hodgson.

INCREASED BUDGET FOR DAIRY RESEARCH

Mr. MARSHALL. Doctor, you are asking for a $150,000 increase which is a rather small amount of the total money you have. You have discontinued some of your line projects during the past year. It doesn't seem as though it would be too difficult for you to absorb this and get along with the same amount of money that you had last year. I listened very intently to your statement. It is nothing new. It has been in existence for years, has it not?

Dr. HODGSON. Yes, we have been working for a number of years on various related problems.

Mr. MARSHALL. You have done excellent work over these years. We have admired the work you have done. What is so new about some of these things that you require additional funds this year?

Dr. DODGSON. I would answer you to this effect, that we are doing the very best job we can with the money that we have. We think we are working on very important problems. We have closed out some lines of work, and we have taken up some new ones during the year. We do feel we are not doing enough research in terms of the problems that presently exist in the dairy industry. That is why we are asking for an increase.

Mr. MARSHALL. In a few words, if this committee saw fit to not grant you the increase, what particular phases of your work would suffer?

Dr. HODGSON. We would not be able to take up any of these new lines of work. In view of the fact that this particular branch has practically had no increases in the past 4 years, we are continually doing less research because our costs are continually increasing. We have a smaller staff. We are doing less work now than we were doing 2 or 3 years ago because our costs are greater.

Dr. REED. For example, this new life-insurance program has had the effect of taking two scientists off the staff.

Dr. HODGSON. As an example of what is happening to us, when this insurance program came along, out of our budget went enough money to pay two technical people.

Mr. MARSHALL. What success have you had in the States picking up a bigger proportion of this work?

Dr. HODGSON. Of course, we do not have much control over what the States do, except in cooperative work where we work with them jointly and furnish part of the funds.

Some of the States are doing some work along these lines. I would say, however, that in regard to the solids-not-fat work, no one is working along this line.

Mr. MARSHALL. Thank you again.

Dr. REED. I would like to make one statement on that.

On page 39, in 1954 dairy husbandry used $1,270,000, for 1955, $1,281,000 is estimated.

Let us go back to 1952 and 1953 adjusted for comparability with present appropriation structure. In 1952, they had about $1,254,000. In 1953, $1,278,349. You can just look at these figures and see how there has been very little increase over the 4 years. Feed costs are up, labor costs are up, and everything else is going up. We have had to take out the pay increases, and so forth. Now with the insurance and other things coming on, probably more funds will be taken out, and this $150,000 will just about restore our funds for research back where we were.

RECEIPTS FROM SALE OF PRODUCTS

We do not get credit for our milk, meat, and dairy products. If we got credit for about $150,000 worth of milk, meat, and dairy products sold at Beltsville every year, we, perhaps would not need the increase being asked for. Those funds go into the Treasury.

Mr. ANDERSEN. You do not have the credit of these receipts as an offsetting factor?

Dr. REED. No. As the milk goes up and the price goes up, we do not get credit on our feed bill.

Mr. ANDERSEN. Why don't you request of the Congress to have this revert to your feed fund or something of that nature? Wouldn't that have the same effect?

Dr. REED. The law now is that all the receipts must go to the Treasury.

Mr. ANDERSEN. I know. As a general thing, I am in agreement with that law. We do not like these rotating funds, or whatever you may call them. In this case, however, you people do not get any credit at all for these sales you make?

Dr. REED. It is upward of $150,000. I have argued before committees before, Mr. Andersen. I have argued here that if you just reappropriate the amount that we produce as a result of the research, and that is about the amount of increase we are asking here, it would take care of increased costs and keep our funds for research intact.

Mr. ANDERSEN. I suggest that you officially ask us to do so.

Dr. REED. I have mentioned this matter on several occasions. It lost out somewhere along the line.

Mr. MARSHALL. That leads to another question, Dr. Reed, what incentive is there for you to get the best price you can for the produce you sell?

Dr. REED. Just because it is right, that is all. It is the right thing to do. When I came here many years ago, I will say, it was the prac-

tice to keep a daily milk record of the amount of milk that was produced and sold. Sometimes the amount sold was as much as 30 percent less than was produced. It just walked out of the barn. You know how that goes. We have corrected this situation to where the differential is down to 2½ to 5 percent which is limited to what is lost when the cow kicks the milk bucket and a few other unavoidable losses and what the calves drink. Our milk is all sold under bids which are obtained every 3 months.

Mr. MARSHALL. What did the sales amount to in your department last year in total money?

Mr. BEACH. $81,411 for sale of milk products.

Mr. MARSHALL. That is of dairy proceeds?

Mr. BEACH. Yes.

Mr. MARSHALL. You sold some dairy animals in addition to that?

Mr. BEACH. $77,562 from sale of livestock and livestock products. There was also income of $5,998 from sale of service.

Dr. REED. In our work of breeding animals, we rarely sell them as breeders. They usually go for meat. You see, we utilize them in our anatomical and physiological work for getting body measurements. We want to see them killed under supervision.

Mr. ANDERSEN. What did you say was the total amount?

Mr. BEACH. The sale of dairy proceeds was $81,411. The sale of livestock and livestock proceeds was $77,562.

Mr. MARSHALL. Total?

Mr. BEACH. In the livestock field.

Mr. MARSHALL. If you sold a cow, your sales receipt would go into the General Treasury for that cow?

Dr. REED. Certainly.

Mr. MARSHALL. If you buy a cow to replace her, that comes out of appropriations?

Dr. REED. Yes. We are not operating like you are on a farm.

Mr. SPENCER. Might I comment on this sale of animals? There is one exception to what Dr. Reed has just said. There is a provision under which livestock and livestock proceeds can be exchanged. That does not mean that if Dr. Reed has a cow surplus that he can go out and exchange that for another animal. If he has an animal that has outlived its usefulness on a particular project and another animal is needed, arrangement can be made for an exchange or sale of an animal, and the purchase with those proceeds of another animal.

Mr. ANDERSEN. He cannot take that over to a neighboring farmer and exchange it for feed, can he?

Mr. SPENCER. No.

Mr. MARSHALL. If there are no further questions on this particular item, we will proceed.

ANIMAL AND POULTRY HUSBANDRY RESEARCH

Dr. Byerly, we will hear your general statement on animal and poultry husbandry research. We notice you are asking for an increase of $247,000.

Dr. BYERLY. I will proceed according to our major lines of work, that is, swine, sheep, beef cattle, poultry, and so on, and include, if I may, a reference to the increase in the item in each of these where an increase is requested.

All of the increase items in animal and poultry husbandry research refer to the general field of livestock breeding.

SWINE HUSBANDRY RESEARCH

We are just now completing at Beltsville more than 15 years of research with hogs derived from combinations of the Danish Landrace and American pure breeds of swine.

We have during the course of this research developed these facts at Beltsville, in correlated and coordinated research at Miles City, Mont., and in the regional swine breeding laboratory at Ames, Iowa, which cooperates with several of the Corn Belt States. By selective breeding the rate of daily gain can be improved, and with it the efficiency of feed production. It is possible by mating unrelated swine through crossbreeding or through selected crossline matings to improve the number of pigs weaned per litter. It is possible to use the crossbred gilts and obtain further increases in the number of pigs saved, and these, of course, are the basic economic factors in swine production. But as this work has progressed it has become increasingly apparent that with our traditional production of more lard than we consume in this country—and this is nothing new, it has been going on for 50 years—it would be highly desirable that we produce not only swine that are economical from the standpoint of feed conversion, from the standpoint of the large litters produced, but also it would be necessary that those swine will produce only enough lard for our domestic consumption—the so-called meat-type hog. We have established that through the program at Beltsville, Miles City and in cooperation with the Corn Belt States through selective breeding.

It is not a simple proposition, and thus far only a minor portion of our swine do reach slaughter at this particular quality. The factors that we need to study are these: First, we must test systems of breeding. Then we must test the physiology of growth of swine and the laying down of fat so that we will have basic information to guide our swine producers.

There are two small increase items with respect to swine breeding. One of these would be an association with the work of the Regional Swine Breeding Laboratory, and would permit us in cooperation with the Michigan Experiment Station, and the Ohio Experiment Station to initiate new projects, looking toward the sampling of existing populations of swine at both stations, using purebred swine, to find and evaluate stocks that will have these basic economic qualities, and which in addition, will produce carcasses at slaughter time of the preferred market quality.

At Beltsville we are terminating our 15-year projects and replacing them with 3 projects. One is a basic project to determine how far we can go with selective breeding for fatness and for leanness, to test our limits, and to find out what the combinations of these will do from the genetic standpoint. The other is a test carried on at Beltsville and at Miles City on a new method of breeding called reciprocal recurrent selection.

I have pointed out in connection with my remarks in swine breeding that it is possible to select rapid-growing swine, the progeny of which will also be rapid growing. With respect to the number farrowed and

the number saved, merely selecting from large litters apparently does not get along very fast. We have to get particular or combining value between unrelated stocks. This is a tedious process because it is a matter of hunt and pick, and the number of proper combinations is much less than the total number of combinations. It may be only a small percentage, say, 10 percent of such combinations that will really give us a larger number farrowed and number saved.

NEW BREEDING METHOD FOR SWINE

This new method which theoretically would combine both the advantages of selection for additive factors, such as gain, and maybe carcass quality—since its heritability is fairly high—in this recurrent reciprocal method with lines that are built for combining value. In this method you select not the progeny within the line itself, but the progeny which is produced by the cross-line matings. You don't breed from those. You go back to the parent stock, which in combination gives the best combination. You breed these to interlock, to fit one another.

On paper this method is fine. From the standpoint of demonstration it has not yet been shown as the method of breeding of choice with major livestock. The laboratory experiments themselves are relatively young. There is a project at Purdue University in which we cooperate and which is supported by Rockefeller funds, National Science Foundation funds—we put no money in it—with the fruitfly which has been tested for more generations than any other. After 35 generations the progeny of the reciprocal recurrent lines are equaling the best selected hybrids, which is our standard with respect to this particular project. Whether we can go on beyond that I do not know. If it took 35 generations of swine, this would be a long-term job. We hope to learn more of the methodology, and we hope this will not require 35 generations. The need for that breeding method is very great. These things are being done with our regular funds.

The work that we are not prepared to do with our present staff and funds is to add at Beltsville a study of the physiology of fat deposition, so we can have basic information to guide us in the relationship of the swine as they grow to the nutrition that they reflect. If we can raise pigs on barley and milk, we can raise lean pigs; if we put them over on corn and tankage, even our leanest pigs will tend to grow to the fat side. The interaction between the genetic capacity of the pig to lay down a proper carcass and the environment in which that pig grows is a new field. We do not now have available to us within our existing funds, nor within our existing personnel, a physiologist to carry on this line of work.

The amounts involved in these two particular small items are not large. I think the one for the breeding laboratory amounts to about $15,000 and the one for the Beltsville item is about $38,000. That covers the swine-breeding phase of the work.

SWINE NUTRITION RESEARCH

We are doing further research in swine beyond breeding. With respect to our nutrition research, we are working very hard on the nutritional requirements for reproduction. We have found that by

a higher protein content of the breeding diet, with use of vitamin B_{12} in adequate amounts, and the use of antibiotics in the feed, we can increase the number of pigs farrowed and the quality of the pigs farrowed. We are also, of course, concerned with cutting feed bills on the sow during her period of gestation and her period of lactation, because the feed bill of the sow itself is a large factor in the feed cost of producing pigs. We have put them out on alfalfa and ladino clover either with or without supplement. It is possible to utilize this where there is a large amount of lush forage for sows during the gestation period. We can't carry that over into lactation because the sow, to carry a litter of pigs, has to be well fed. There is corollary work on this at the Minnesota Agricultural Experiment Station where Les Hanson is carrying on research on the limitation of feed during gestation. He has, he tells me, succeeded in bringing down feed costs quite successfully. There is an interesting point here. It is not by limiting or hand feeding the pigs, but by upping the fiber or using more oats, so that every gilt has a chance to eat her fill. If you hand feed the greedy ones, they will get all they want but the timid don't get enough.

COOPERATIVE RESEARCH ON ATROPHIC RHINITIS

There is one factor that I would like to refer to, which is cooperative between our group and Dr. Simms' group, that is the work with the atrophic rhinitis. In our herds at Beltsville that had become widespread. There was a serious management problem and it interfered with our breeding program. In cooperation with Dr. Simms' group we set up a management program which, from our standpoint, required the isolation of the pig from the sow at birth. A man simply stood there as the pigs were born and took them away into isolation. This enters into the nutritional field and calls for knowledge in that field. Our knowledge as to how to feed the new-born pigs is not very good yet. We did succeed, however, by the use of colostrum and limited amounts of blood serum in rearing half of these pigs. Dr. Simms may refer to atrophic rhinitis in his remarks. I believe these pigs passed through the second generation, and we considered it successful, without any clinical manifestation of atrophic rhinitis. We feel it is demonstrated that an atrophic rhinitis-free herd can be established in this way. This particular piece of work is completed. I only wanted to remark that we are learning something about the nutrition of the pig. We have more work to do in that field.

I would be glad to pause after each of these major classes of livestock, if you like, Mr. Chairman, if there are questions. Or shall I continue on through?

Mr. MARSHALL. Follow along with the discussion, will you?

SHEEP HUSBANDRY RESEARCH

Dr. BYERLY. We will proceed with the sheep. As some of the members of the committee know, our research with sheep is divided into three major locations at the present time: The Western Regional Sheep Breeding Laboratory at Dubois which works in cooperation with each of the 11 Western States and Texas; our Southwestern Sheep Breeding Laboratory which works in cooperation with the State of New Mexico and the Bureau of Indian Affairs; and our farm sheep program at Beltsville.

The Regional Sheep Breeding Laboratory at Dubois has produced perhaps as much information with respect to the genetics of sheep, with respect to the effect of selection for wool character—that is, fineness of fleece and weight of fleece—as all of the information collected during the same period of time anywhere else put together.

We have a very fine staff of geneticists. They have succeeded in developing fine lines of sheep. They have worked with the Rambouillet. They have succeeded in improving the Columbia sheep, which was developed by the Department of Agriculture—started at Laramie, Wyo., in 1910. They have also worked with the Targhee sheep, which is a fine wool sheep, producing heavy lambs and heavy fleeces.

The basic purpose of the research has been to develop methods of breeding sheep. Inbred lines have been developed now to the point where test combinations in breeding among those lines are necessary—tests of the value of rams from those lines on commercial flocks and other unrelated flocks are necessary. During the history of this laboratory the funds have been sufficient only for the work at laboratory, and the cooperating States have elected that they should be expended at that point. The States are very anxious to contribute themselves to the development of small lines and the test of lines, at their own experiement stations. We need a small amount of additional funds to help the States with this work which they want to do in the development of small, inbred lines and for the tests of combinations of the lines at the laboratory with their own, both in top crosses and in the so-called hybrid combinations of inbred lines.

There is a small increase for that. The amount for that is about $15,000. It would be expended in cooperation with the State experiment stations in the Western States.

FARM SHEEP RESEARCH

With respect to our farm sheep program at Beltsville we have carried out for the past 6 years, and will continue through to the completion of a 10-year test period, a pattern of crossbreeding among the down breeds of sheep and the Merino, which is our farm fine wool sheep. This has been a successful demonstration of crossbreeding in systematic fashion. It has upped the fleece weight of the crossbreds over their purebred parents about 15 percent. It has increased the lambs saved by about the same amount. The quality of the lambs has in general been good, but that is quite different from one mating to another.

This program has some 4 years to go to completion. It is our hope from the long-run standpoint that at Beltsville with our farm sheep work we will more heavily stress the nutrition research with farm sheep. As the breeding project is completed some 4 years hence, our nutritional program will then have grown. It is already growing with existing needs. We need a small amount of additional money, to go into the southeastern United States where there is a very live interest in the production of lambs, and in which grass is becoming available from diverted acres and from acres brought under cultivation from wasteland which could be used productively for sheep. There are problems of production. There are problems of getting sheep that will breed early in the season because sheep are highly seasonal breeders. There are genetic variables there. They breed in short days. Some breeds are less subject to the short-day variation,

and some more. The problem there is with the period of breeding. There is also the problem of adapting these things to the available winter forage.

Another problem of very real concern in the Southeast is whether in the long run they are better off to buy western lambs as their base ewe flock or raise their own. These problems are all there to be tested. The amount involved in this proposal for cooperation with the Southeastern States is about $23,000. It is new work. It is not covered under our present budget. It is work which it seems to me is not only desirable but is in the interest of the use of the grass that we are going to grow there.

Mr. ANDERSEN. You say it is new work, which I agree with. Don't you have some old work that can be discarded and utilize such funds for this new work?

Dr. BYERLY. I have not been able to devise that. I have told you of our work at Beltsville which has 4 years to go.

Mr. ANDERSEN. I am just bringing this up as an example. I am still of the opinion that we have some deadwood in research which could well be replaced by work on more urgent problems.

Dr. BYERLY. I understand that. I am using it as a sample, too. We have 4 years to go with our Beltsville breeding program. It is our intent to use our Beltsville facilities and flocks in the future principally for nutrition as we wind up this breeding phase of the work. I cannot foresee a time without curtailing what I feel is the necessary growth of our nutrition program for sheep, when we will have available $23,000 which we could utilize, without curtailment of the Beltsville work, for initiating this work in cooperation with the Southeastern States. If we had to choose one or the other, we could make that choice.

Mr. ANDERSEN. Through the years I have had ingrained in me the idea that you particular gentlemen across the table from us here today take your obligations, as far as the taxpayer's money is concerned, more seriously than most groups we have before us. I have every confidence in you. I have watched you operate through the years. But I still get back to this old theory of mine, when we start something new as to whether or not there isn't something old we can drop in return. That applies to our entire budget.

Dr. BYERLY. I am entirely sympathetic with your examination of it. I tried to bring out in discussing the swine work, that, we have come to an end of a phase. In order to carry on an added phase we have to hire an added man. We can't convert the man. We have to have a new man, newly trained. The man that we have would not be suited for that. Whether we have to do the added thing, whether we have to do it now is for you to say. I can only say that I feel the money would be well spent and productive.

BEEF AND DUAL-PURPOSE CATTLE RESEARCH

If I may, I will pass to the work on beef and dual-purpose cattle. We have talked to you before about our very broad cooperative program in beef cattle breeding which is cooperative with 38 States and the Territory of Hawaii. Dr. Reed referred to the fact that the combined herds among our cooperators now numbers about 10,000 cows and several hundred lines of cattle.

The herds seem large and the numbers of lines seem large, but again we come to this: We develop lines, and we can do this simply by

stereotyped reproduction within the line itself. The problem of evaluation of the line and the problem of evaluation of the combinations among the lines for superior combinations, which we must take into account in breeding, is a very large task. But, in particular, the problem that bothers us here, and the problem that we are not prepared to undertake with our present staff and funds is the quality of the carcass that we produce. The problem of fat is not only a problem of getting more nonfat milk solids but it is also a problem with beef of getting more flesh with an optimal amount of fat and not one ounce extra.

We can sell a well-fleshed, well-fed heifer or steer at a pretty good price and it will grade pretty well, if it has flesh where the buyer looks for meatiness. In the past, and even at present, the way to get that plump, fully packed carcass was to put fat on it, cover it up. Part of that is breeding. Part of that is, of course, our traditional way of feeding.

I think our base problem in selecting these animals is to make sure that as we select for rapid gain and reproductive performance we do not neglect the final carcass that we get. Especially among our States, and among our field stations it is difficult to get adequate evaluation even at the end of the slaughter period. We can get cooperation from packers. We can withdraw the 11th rib from some samples at cost, but the States do enjoy a revolving fund at most points. If you take out the rib, you reduce the carcass value and it is a little more difficult for them.

ESTIMATING FAT IN BEEF CATTLE

The other and more important thing is that as yet with cattle we have only the most tedious method for estimating composition as we go along. If we select a bull, we think the bull looks all right. He is round, but we don't know whether he is fat or lean. We can only guess at it within a rather wide margin of error. We need means of quantitatively estimating composition of the live animal. We have one laboratory method developed, antipyrene. We have another method using fat absorption of anesthetics. They are well-developed methods. Perhaps the one developed by Fred Andrews at Purdue for swine, in which he sticks a needle into the swine with an electric contact established when the point passes through an electrolyte, thus giving a registration if it hits blood and none if it passes into the fat, may be adapted. But even if it is, we do not have the personnel at the field stations to carry on this phase of the work which requires emphasis and which is above our present capacity.

REPRODUCTIVE FAILURE IN BEEF CATTLE

The other factor that is equally important with cattle is that we have to come back to this whole problem of reproduction in beef cattle. Dr. Reed emphasized the reproductive failure. In beef cattle, since they are less concentrated, the loss may be not quite so great from the standpoint of disease transmission as in dairy cattle. The abortion rate may not be so high, but it is still very substantial. Let me emphaisize the fact that he brought out. When a cow does not breed, you carry her for a year and sell her at the same price at the end of the year, you are out $25 to $100 for feed and you don't have a calf to sell.

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Mr. MARSHALL. Have you had problems of breeding in the drought area which have caused difficulty?

Dr. BYERLY. We have a station at Fort Reno. I can only say this. That station has been characterized regularly by 90-percent calf crop. It will be interesting to see what the calf crop will be this year of drought. I have also followed data collected at Fort Hayes by the Kansas group and Miles City by our folks over a long period of time. Regularly we can anticipate that a drought year will be followed by a low calf crop. It may be as much as 25 or 30 percent less.

Dr. SIMMS. That same thing is seen in calf crops in the country year after year. Those areas that are very low in rainfall and have relatively poor forages will year after give us a 55, 60, or 65 percent calf crop as compared to 75 to 90 where we have better rainfall and forage.

There is down through the years a pretty close correlation between good feed and relatively high calf production and short feed and poor quality calf production.

Dr. BYERLY. I might pause at this point and ask if there is any question about the money you gave us for dwarfism. Are you concerned with where we are spending it?

Mr. MARSHALL. Yes; we would like to know what use you have made of that increase.

Dr. BYERLY. Please stop me if I give more detail than you want. We are spending that in cooperation with the States. I have a tabular breakdown.

Mr. MARSHALL. Might you not put that in the record?

Dr. BYERLY. Yes.

(The material referred to follows:)

Increased funds have been used in developing research on dwarfism in beef cattle as follows:

California	$7,000	Tennessee	$3,000
Wyoming	3,450	Florida	2,500
Utah	3,000	Virginia	2,500
Colorado	3,486	Louisiana	2,000
Montana	2,000	Program and general administrative costs at Beltsville, Md., and Washington, D. C.	6,364
Iowa	2,500		
Nebraska	5,250		
Oklahoma	5,250		
Texas	3,500	Total	51,800

RED DANISH CATTLE

Mr. ANDERSEN. Doctor, you have under your charge the experiment having to do with studies as to the inheritance of certain physical characteristics by crossbreeding the Red Danish breed, do you not?

Dr. BYERLY. No, sir. That work is in the Dairy Husbandry Branch.

Mr. ANDERSEN. I am curious as to where you obtained your stock for such experiments, Dr. Reed. Isn't it prohibited to bring Red Danes into the country because of foot-and-mouth-disease conditions in Denmark?

Dr. REED. In 1935 when we brought these cattle in, we could bring them in from Denmark because there was a period when they did not have foot-and-mouth disease. We have not been able to bring in any more of these cattle because of health regulations.

Mr. ANDERSEN. You have some strains of the pure breed in this country?

Dr. REED. We brought in 20 cows and 2 bulls. They were bred. We kept that germ plasm intact.

In the work you referred to in the line project in cooperation with the Indiana Experiment Station we are crossing the Red Danes with Milking Shorthorns and Red Poll cattle to improve their milk-producing ability. As a matter of fact, we would like to bring in additional Red Danish cattle if Denmark were free of foot-and-mouth disease.

Mr. ANDERSEN. I rather regret that we are in that situation. I had the privilege of looking over several herds of Red Danes while in Denmark 2 years ago. To me those herds appeared to be what we have been looking for for years in the line of dual-purpose cattle. They seemed to be the ideal. I am hoping that something can be done so that we can continue the experiments with that particular breed of cattle.

Dr. REED. You would be interested to know that when we brought these 20 females in we kept the cows for milk production but we had a surplus of bulls. We found a Danish community in Michigan that wanted to try out the bulls, and we wanted to loan them so they could prove the bulls for our work. We have loaned this group more than 50 bulls; that is, since 1938. These cooperators have followed the same pattern as is followed in European countries in establishing a new breed. In this case they have established a breed called the American Red Danish breed. They started out with their grade cows and after making three top crosses with Red Dane bulls they recorded the female offspring. The recording of bulls in their association requires four top crosses of the pure Danish bulls. In Michigan they have bred through artificial insemination over 5,000 cows to Red Dane bulls. This new breed will aid us in getting unrelated bulls for our work. We would like to get some new stock from Denmark, nevertheless.

Mr. MARSHALL. The committee will stand adjourned.

WEDNESDAY, FEBRUARY 9, 1955.

Mr. WHITTEN. The committee will come to order.

We will proceed with Dr. Byerly.

POULTRY HUSBANDRY RESEARCH

Dr. BYERLY. Our poultry research is carried on at Beltsville, Md., at East Lansing, Mich., at the central testing station at Lafayette, Ind., at Glendale, Ariz., and in cooperation with each of the States, usually at the State agricultural Experiment station.

I think the committee is familiar with the remarkable improvement in efficiency of feed utilization that we have had in poultry in the last 15 years, especially with respect to the production of meat-type chickens.

In 1940 we have estimated that it took about 4 pounds of feed to produce 1 pound of live broiler. At the current rate it takes about 3 pounds of feed to produce 1 pound of live broiler. We have available in the laboratory now experimental research going on that we confidently expect will enable the broiler producer to save at least another half pound of feed per pound of broiler produced.

Our breeding research in poultry, of course, progresses more slowly. However, the application of breeding knowledge in egg production during the last 20 years has brought about an increase of about 40 percent in the egg production per hen. Twenty-five years ago we were producing about 10 dozen eggs per hen. Now the average hen on the farm produces about 15 dozen eggs.

It seems to us necessary and feasible to continue research on breeding to improve the rate of growth of chickens and turkeys, to improve the fleshing, and to improve the number of eggs laid per hen because feed cost is the principal cost of production. The cost falls as egg production per hen increases and as rate of growth in the meat-type birds increases.

The methods of breeding that we have had in the past are based largely on selection for individual and family performance and up to now have brought about most of our increase. Now our research has to progress to new methods, the comparison of family selection in closed flocks, and the development of hybrids among inbred lines. This is a long search because first you must develop inbred lines and then select the combinations of inbred lines that prove to be productive. These may be only 3 to 4 percent of the combinations tested. In that work we are cooperating with all of the States in the four regions.

We have a substantial project in the north-central region and in the southern region—in the north-central region principally for egg production and in the southern region emphasizing broiler-meat production. We are asking for a small increase in funds to help us cooperate further with the southern region at their central regional poultry testing station at Athens, Ga., and to initiate cooperation with the northeastern region which has, with regional or RMA 9 (b) 3 funds, initiated its poultry-breeding project for the first time this year.

RESEARCH ON AVIAN LEUKOSIS COMPLEX

With respect to our work at East Lansing, Mich., the research there is cooperative between the Animal Disease and Parasite Branch and the Animal and Poultry Husbandry Branch although administratively it falls under the Animal and Poultry Husbandry Branch. The research is devoted to a study of a single disease, the avian leukosis complex, or range paralysis. This disease is transmitted by means of an infective agent which may be egg transmitted, and is certainly transmitted from chick to chick during the early portion of life.

There is not available any diagnostic method for the disease prior to its gross manifestation, which may be postponed for a year or more in the chicken's life though infection may take place at the time of the hatching of the chick or soon thereafter. Avian leukosis complex accounts for the greatest amount of mortality of any disease suffered by poultry. It is estimated that 10 percent of our laying birds die from this disease during the first year of their laying period. The disease is particularly difficult because in its expression it is a neoplastic or cancerous type of disease. Not only does it spread by infective agent but the factors determining its expression are unknown. There is no diagnostic test.

The East Lansing laboratory was established about 1938 and has substantially the same appropriation that it had at that time. We are

asking for a small increase to enable us to hire about two more professional people to more fully utilize our existing facilities at that laboratory.

BREEDING FOR RESISTANCE TO AVIAN LEUKOSIS

I cannot emphasize too strongly the importance of this disease, nor the research program on it which is long time in nature. The present knowledge that we have is that it is possible to breed for genetic resistance to the disease but we are still at sea with respect to the usefulness of genetic resistance. While we can develop genetically resistant lines which are resistant as lines, when those lines are crossed one with another, sometimes the cross combination is less resistant than either parental stock. This is an unusual circumstance and a puzzling one.

We do find some combinations, hybrid combinations or crossbred combinations, that are as resistant or more resistant than the parental stocks. But here again our research for effective hybrids is further accentuated by the fact that not only must they be productive from the standpoint of egg production, but if they must also be resistant to this particular disease it makes not 4 percent of the combinations which will be useful but perhaps one-fifth of the 4 percent, perhaps no more than 1 percent of all combinations.

RANDOM SAMPLE PERFORMANCE TESTS

Finally, we have a small item of increase of about $15,000 that we are requesting for cooperation with the poultry industry in the operation of random sample performance tests. The poultry industry has grown very conscious of the importance of performance of the chicks that they buy. As you all know, about 95 percent of all poultry is purchased by the farmer as day-old chicks or day-old poults. At the present time he has only the official status and reputation of the breeder or hatchery, the general reputation as to the stock in his community, and the advertising to go by. He wants a better measure.

Genetics has developed for us what promises to be the most adequate present measure; that is, to withdraw samples of the breeding stock as hatching eggs, to bring these samples to a central place, to hatch them, to brood the chicks, and to keep the subsequent adult stock under the same environmental conditions during their first year, achieving in this way a fairly high probability that these results will be highly correlated with the result that the farmer might expect on his own farm with the same stock.

Two such tests have existed for several years, one in New York and one in California, both supported by State funds. Other tests supported by State and industry funds are in process of establishment or development in Missouri, Florida, Utah, Wisconsin, Illinois, and perhaps in some other States.

We are not asked to contribute—that is the Department of Agriculture is not asked to contribute—to the construction of these tests, nor to their operating costs. We are asked to cooperate in the evaluation of test results so that the reliability of these results may be measured so that the farmer may not only read what the result was but know what it means.

We are asked to cooperate with the States, too, in research for the improvement of test methods so that the reliability of the performance tests may be improved.

These three items together amount to $87,000. Except for questions which the committee may have, I would like to conclude my remarks at this point.

Mr. WHITTEN. Thank you, Dr. Byerly. Mr. Andersen, do you have any questions at this time?

Mr. ANDERSEN. I have no questions except that I do want to say this: I have every confidence in this group that is across the table from us today. I always find their testimony very interesting.

Mr. WHITTEN. We will turn to Dr. Simms now. Dr. Simms, we will be glad to have your general statement.

ANIMAL DISEASE AND PARASITE RESEARCH

Dr. SIMMS. Thank you, Mr. Chairman. It is always really a pleasure to come back and talk to you people, not only in presenting our material to you, but the viewpoints that you bring and the questions that you ask are helpful.

I will repeat what I have said before: Up to now we have never seen any country that had a well-fed population that did not control its animal diseases fairly well. When animal diseases run rampant the people in the area are always not well fed.

We control animal diseases, of course, only by putting into practice those procedures which are worked out in research. In some instances it takes a very long time for the research to come up with an answer. We have some diseases that we have not found an answer for as yet. But, in general, throughout the world where we have had good well-organized research, well-supported with personnel, facilities and funds, we have at least found a reasonably satisfactory method of control of transmissible diseases.

With your permission I would like to point out just a few of the accomplishments of the last 12 months and then discuss, following that, some of the problems that we are still facing and some of the items concerned with the requests for increases in appropriations.

ANAPLASMOSIS RESEARCH

We think the last year has brought reasonably good results from our research. One thing we have been very well pleased with is the progress of our studies of anaplasmosis, a very widespread disease of cattle and one that has been fairly destructive in some areas. We have had this disease for a long, long time. With a marked increase in traffic in cattle in the last 15 or 20 years it has spread to new areas and has been quite destructive in some sections where it had not been reported up until 10 or 15 years ago.

As long as 20 years ago we found a laboratory method for testing for the disease that was fairly successful but we were unable to produce, time after time, the test materials for this complement-fixation test. In 1932 or 1933 we gave a preliminary report on it. We worked long and hard at trying to develop a satisfactory method of making an antigen which would be standard.

Within the last 12 months we believe we have found a method of making antigen which makes it possible to test animals for anaplas-

mosis in fairly large numbers. We have run tests of the antigen we have prepared not only in our own laboratory but we have cooperated with such States as Louisiana, Maryland, and Oklahoma, and other laboratories, which have been able to duplicate rather closely the results that we have had.

We are now at the point where we are taking the test to the field. We are doing some testing in cooperation with the people in the Hawaiian Islands. We are testing most of the cattle in one county, in the intermountain areas. We are working with the Animal Disease Eradication Branch in this application of the complement-fixation test for anaplasmosis.

DESCRIPTION OF ANAPLASMOSIS

Anaplasmosis is a disease caused by a parasite which attacks the red blood cells. In most severe outbreaks it is usually tick transmitted. It can be transmitted, however, in many different ways. For instance, we know a man who dehorned his cattle, using the same saw without cleaning it. One of the hottest outbreaks I ever saw came from this dehorning operation. The man lost over half of two carloads of steers. Anaplasmosis has been transferred on needles that were used for vaccination. A drop of blood on the needle will carry it to another animal.

The symptoms are acute fever, weakness, and the animals become quite anemic. The anaplasma destroy blood cells. This liberates yellow pigment in the blood, so the animals get jaundice. Animals with white skin, no pigment in the noses or the udders of the cows, show jaundice very plainly. The owner will tell the veterinarian, "My cow's nose turned yellow," or, "her teats turned yellow." This is the same condition that is observed when the skin turns yellow in jaundice in man. The mortality in mature cattle is quite high. Anywhere from 25 to 30 up to as high as 70 or 80 percent of mature cows that get the disease will die, depending on the condition of the animals when they come down. In hot weather it is a little worse than it is when the weather is temperate. If the animals are exercised unduly, driving them back and forth to get them to a shed or to shade somewhere, that is very tough on the anemic animal.

Young animals, however, live through it in almost all instances. Six-, eight-, or ten-month-old animals will show very slight symptoms or maybe none at all. The significant thing is once an animal becomes infected it usually remains infected for life. They recover insofar as symptoms are concerned but they still carry it. We had one carrier at Beltsville, Md., that we infected about 1928 and it was still a carrier when it died about 18 months or 2 years ago.

Mr. HORAN. This new method then will enable you to find that?

Dr. SIMMS. That particular animal reacted to this test. We have tested our known infected animals at Beltsville and we have tested serum of known infected animals at the stations in Maryland and Louisiana and the indications are that the test is somewhere around 95 percent accurate.

As I say, now we are taking it to the field.

DESCRIPTION OF VIBRIOSIS OF CATTLE

Another disease of cattle that we have been working with in the last year is vibriosis. You recall that we had an increase in funds granted during the last session for work with this disease. We think we have made significant progress in studying this problem.

We have always in the past been puzzled by the fact that in many instances we could find vibrios in animals that apparently were not having any symptoms of the disease.

Vibriosis is a genital disease of cattle. It is transmitted by the bull to the cow and then from the cow back to the bull which mates the infected cow. It causes almost no symptoms in the bull; perhaps sometimes a light discharge from the sheath may be seen. In cows it causes infertility, and sometimes abortion. Cows have a tendency to recover spontaneously from the disease. If you let them go without breeding for several months many will recover. Bulls, however, do not have that tendency and once a bull is infected there is a pretty good probability that he will remain infected for an indefinite length of time.

Within the last year we have been working with the vibrio that causes the disease. As I have indicated we have been somewhat concerned over the fact that we could find vibrios in a good many animals that, insofar as we could tell, were having no indications of disease.

We found them in virgin heifers. We have never thought that the typical disease-causing vibrios occurred in virgin heifers.

CURRENT RESEARCH ON VIBRIOSIS

The workers at Beltsville have studied these vibrios which are like the ones that cause the disease insofar as they appear under the microscope and in the usual growth characteristics; but those organisms that come from animals that are not showing any clinical symptoms show a difference in the products of growth from those that cause disease.

The organism that causes typical vibriosis produces an enzyme catalase during this process of growth, while those that we say are saprophytic or do not cause disease do not produce catalase in any considerable quantity, maybe only a trace of it. So by growing the organisms and then testing the culture mediums in which they are grown for catalase, we think we can separate the disease-causing vibrios and those that do not cause disease. If this holds up, and it has held up until now, it will give us a very much better tool for examining herds in which we suspect the disease.

For instance, this happened not too long ago. A man was having breeding trouble and one of our men went out and looked at his animals. He found both trichomonads and vibrios in the cows. But when he used the catalase test the vibrios that he had found did not produce catalase. The evidence seemed to indicate then that trichomoniasis was the disease that was causing the difficulty and that proved to be true.

We are looking in to a test somewhat similar to a test made for brucellosis, that is, an agglutination test. We are using, not blood

serum from the animal, but some of the secretions from the vagina of the cow or the sheath of the bull. Results of some of these tests look rather favorable. Other people are working on this, too. Some work is being done in Europe with this agglutination test.

Dr. Frank, who is our leader in this work, has just attended an international conference on this in Europe. He did not go on our money. FAO sent him to this conference; he not only contributed but he came back with some new knowledge that had not been put into print yet.

TESTS OF SEMEN FOR DISEASE

Mr. HORAN. Could you answer my question of the other day now? You were discussing the semen. I wonder if you had any method to determine whether semen itself was disease-free.

I wondered if in the importation of this semen you had any way of certifying that it was disease-free itself.

Dr. SIMMS. An examination of the semen on several occasions will give you a reasonably good picture. We have found, however, that some bulls that are infected will occasionally give a good sample of semen. That is, the best examination we can make will indicate his semen is free from vibrios. We would not go too strong on a single examination.

A single examination is helpful but an examination of 3 or 4 semen samples at intervals of a week gives you a reasonably good picture.

Another thing that is being recommended and being widely used, which seems to be giving good results at home and in Europe, is the use of some one of the antibiotics in the semen: one that is not destructive to spermatozoa but will hold in abeyance the vibrio.

We think that the use of an antibiotic plus maybe 2 or 3 examinations if possible, will give us reasonable assurance on semen.

The safest thing up to the present, though, we believe, is to just as you have done, that is use a virgin bull, and in that way you can be reasonably sure that you are free of the disease.

Does that answer the question?

Mr. HORAN. Yes. Thank you.

CATTLE GRUB CONTROL

Dr. SIMMS. Within the last 2 years we have been working with methods of eradicating grubs in cattle. You know the life cycle of the grub—the fly lays an egg, it hatches, the young grub burrows through the skin, wanders around in the body of the cow for a while, and finally several months afterward appears under the skin usually in the area along the back; the loin area. It cuts a little hole in the skin and after a few weeks it comes out, falls on the ground, and burrows in; here it pupates and finally the fly pupa comes out. It takes about 12 months for the cycle to be complete. These parasites cause serious economic losses for at least three reasons.

In the first place they irritate cattle on pastures. The cattle will run and sometimes stampede when irritated. People say that cows

that are bothered with heel flies, as they are called, fall off in the milk the days that the heel flies are bad.

It is difficult to measure. Beef men say if the heel flies are bad the steers do not gain as much weight because they spend too much time running from the flies.

The second cause of loss that we can measure more accurately is the damage to the hides of the cattle in which they appear. The hides that come off such animals anywhere from January up to May will have holes in them about as big as the end of your little finger. They are discounted considerably on the market.

Even when these places have healed the spot in the hide is left permanently damaged. After the hole is healed the average man would not see any defect, but a good leather man does see the damage which is more or less permanent.

A third damaging result is seen when grubs are present just under the skin in slaughter cattle. Unfortunately they are fairly selective and locate themselves in the high priced cuts of meat. Then on the killing floor the butcher has to trim off that part in which the grub has been living, so that we have trimmed loins going on the market. They cannot be sold as loins, but they have to be ground into sausage or sold as damaged loins.

We take a fairly heavy economic loss in the trimmings of the loins during the months that the grubs are present. They would cause losses from trimming as early as November on the Fort Worth market and up to May or maybe even June in the places like St. Paul.

So the grubs do cause considerable damage.

TREATMENT OF CATTLE FOR GRUBS

We have been working in the last year and a half with treating cattle with phenothiazene while the grubs were present in the bodies. We have had some success with it. We have not destroyed all of the grubs but we have reduced the numbers very materially.

This is till in the laboratory stage. We don't know how practical it will be to take it out in the field. Up to now our success has come only when we gave the animals repeated doses. In the range country it would be impossible for a man to dose his cattle daily.

When they come in off the open range in the fall for feed we could perhaps devise a method for getting the phenothiazene in with the grain mixtures or pellets that are fed to the animals.

Anyway we are working toward that as an application on a grub-control program.

KIDNEY WORMS OF SWINE

Another accomplishment I would like to mention briefly is our work on the kidney worm of hogs. The kidney worm as you may know is a roundworm parasite. In the hog it grows to an inch or an inch and a half long. They are found in the mature state in the fat around the hog's kidney. They penetrate the ducts leading from the kidneys. When the infected hog urinates the eggs are passed. These hatch on the outside and repeat this life cycle. You can realize how difficult it would be to find any drug that would kill that worm buried in the fat around the kidney, and leave the hog alive. It would take a rather selective drug to do that. We have not found any medicinal treatment that works.

The significant thing that we have found, after studying it for some little while, is this: It takes a rather long time for a kidney worm to reach maturity and lay eggs.

Up to now we have not succeeded in getting eggs from any hog until pretty close to 12 months after the animal was infected.

It means, then, starting with the newborn pig today. Up until 12 months from now we can be reasonably assured that the hog will not act as a spreader of kidney worms even though it is on the kidney worm infected premise. More frequently it will be 14, 15, or 16 months before it is passing eggs.

PROGRESS IN CONTROL OF KIDNEY WORMS

That opened up a new method of attack. We have not tried it in the field far enough to see if it will work.

It looks as if we can set up a procedure whereby we will sell all of the gilts soon after they wean their first litters, thus getting rid of them before they recontaminate the premises.

In the ordinary procedure gilts are bred so they will farrow at about 12 months of age. The pigs are weaned at about 8 weeks so that these gilts could go on the market at about 15 months of age. If as soon as the pigs are weaned the gilts are taken away from the quarters where the pigs will be kept from there on, it looks as if we can break the life cycle of the kidney worm.

Mr. ANDERSEN. Does that mean that the sows could not nurse their pigs?

Dr. SIMMS. No. They could nurse their pigs, the first litters. As soon as the pigs are weaned then we get the gilts away.

Mr. ANDERSEN. And also place the pigs on new ground at the same time?

Dr. SIMMS. Yes. Either get the gilts to market or separate them from the pigs. Because by that time the gilts will probably be just about to the egg-passing stage.

This is a practical plan for a swine man, I am not saying that as a veterinarian.

Swinemen tell me that there are many hog producers who make a regular practice, of raising the pigs only from gilts, marketing gilts soon after they wean their first litters. So that if it works, it is practical.

This is a report of progress and not a report of something that has been accomplished.

PROBLEMS IN ANIMAL DISEASE CONTROL

I would like to discuss now some of the unsolved problems that we are facing. As stated at the beginning of this discussion, through pressure the very spectacular diseases have been studied. The disease that kills a large number of animals in a very small space of time usually is so catastrophic that something has to be done about it.

The livestock people go to the State, and to the Department of Agriculture, and get funds and work is started. If we look back at some of the old records—and I am talking now of 50, 60, or 70 years ago—we find where, for instance, a trainload of cattle started out of Kansas City and when they got to Philadelphia over half of them

were dead. Those things aren't happening today. We have done enough work with that type of disease so that most of them are under control.

The big problems that are left unsolved are the ones that are usually not so immediately destructive, but nevertheless in many instances perhaps just as serious. We put these unsolved problems in three groups. The first group would be the disease we have had with us for a long time, but that we haven't ever studied very seriously.

SHIPPING FEVER IN CATTLE

I would include in that group the disease of cattle called shipping fever, which has become more and more serious as we have moved cattle more and more.

You know it is a very unsophisticated steer now that isn't a native of 3 or 4 different States before he finally goes to Chicago to be slaughtered. He probably was dropped in Colorado and maybe he spent a summer in the Flint Hills of Kansas, and probably after awhile went to the feed yards in Iowa, and finally went to Chicago to be slaughtered.

It is the usual thing for us to move cattle more and more. As we do that, the diseases that are picked up in feeding and watering places; in trucks or in passing through stockyards—and one stockyard superintendent really took me to task one time for intimating that such diseases might be picked up in stockyards—have become increasingly important. We need then to find out much more about so-called shipping fever.

Mr. MARSHALL. Do you have any estimates as to how much the death loss in dollars amounts to?

Dr. SIMMS. I would say the total losses from shipping fever are much higher than just the death losses. For instance, I would go to Chicago and buy two loads of steers and bring them to my farm in Ohio. Of these 60 steers, 2 will die from shipping fever but 25 of them will lose 50 or 60 pounds each and then come back very slowly.

So that the loss in the animals that live is in many instances higher than the loss from those that die. We have had estimates—and they are really more or less wide guesses—as to the cost of shipping fever. One man put it as high as $50 million on a national basis. I thought he was too high but I do believe it is costing us a good many millions of dollars.

BRUCELLOSIS IN CATTLE

Then we have a second group of these unsolved problems, diseases with which we have been working for a long time and for which we do have a lot of answers; but as we work with a disease we face new problems. I point out in this connection brucellosis in cattle. We have been working with brucellosis in cattle for 45 years. We published a paper on this disease in 1911, I think, which showed that the organisms of brucellosis were present in the market milk in the city of Washington, which led to the discovery of the fact that cows with this disease have the organisms in their udders. That led in turn to the finding that milk that has not been pasteurized and which comes from infected herds is dangerous milk to humans. Such milk is also a source of infection to other cattle because calves taking such milk

pass live organisms through their digestive systems and contaminate pastures and corrals.

Cows grazing over such pastures, particularly the pregnant animals, pick up the infection.

VACCINATION FOR BRUCELLOSIS

We have been working with brucellosis for 45 years. Somebody might logically ask a question, "Aren't you through? When will you be through? Won't you ever be through?" Twenty years ago and more we were working actively with a vaccine, strain 19 vaccine which proved to be quite satisfactory and has been very widely used in this country and other countries; used, in fact, all over the world.

Just recently the question has arisen, Can you increase the protection which comes from strain 19 by vaccinating a second time? Nobody knew the answer to that one. We have been studying it. Up to now we haven't found any material advantage to any second vaccination.

Another new problem has come up recently in connection with the vaccination: Are there better methods of vaccination than injecting under the skin? How about injecting it into the muscle tissue? How about injecting it into the skin rather than under the skin?

Our first vaccinations were underneath the skin. Recently we have expanded these tests and are trying different methods of vaccination. Some of the Australians, for instance, vaccinated in the tail, the tip of the tail. There have been a good many vaccinations in this country in the skin. Up to now we have not been able to show that any of the other methods of vaccination are any better than the one that we have used. Thus new problems with old diseases constantly arise.

I would say that we are not spending as much money on brucellosis now as we were several years ago, but we still have not been able to close that project. A third demand for work——

BRUCELLOSIS ERADICATION

Mr. MARSHALL. Before you leave brucellosis, Dr. Simms, is there quite a difference between State regulations in regard to the control of brucellosis?

Dr. SIMMS. Yes, there is. Some States have very good regulations, and see to it that they are well followed, and other States have almost no regulations.

Mr. MARSHALL. Do you find that a handicap in the control?

Dr. SIMMS. It is a serious handicap in control. Of course, that is always a problem in any disease-control program on a national basis. Some States do not have as good procedures as the States that are really trying to get rid of it.

Mr. MARSHALL. In regard to the Federal appropriations, because there is some problem in the control, have you made any recommendations to the Congress as to what they might do in order to try to bring about some uniformity?

Dr. SIMMS. That would come under the Animal Disease Control and Eradication Branch and not the research branch. Dr. Clarkson

and Dr. Van Houweling will be very glad to discuss that when they come before you on the disease-eradication programs.

Mr. MARSHALL. However, Dr. Simms, do you feel that, if you had more uniformity as between States, it would be not only a matter of better control of the disease, but it would also be a saving to the taxpayers?

Dr. SIMMS. That is no doubt but that you are correct in that statement. That is universally recognized by State veterinarians and livestock officials.

I would add this: those States that have done as Minnesota has, have made a lot of progress in the control and eradication of brucellosis.

A man from your State went to a meeting set up on the eradication of brucellosis and when he got there everybody started to tell about how to live with the disease, although the program said "brucellosis eradication."

The folks in Minnesota never forget they are working for eradication, and they have done and are doing a very good job. Down through the years they have done that.

Mr. MARSHALL. We are glad to hear you make such a statement about Minnesota.

Mr. ANDERSEN. We certainly are.

Dr. SIMMS. I have said that many times to other people as well as to you.

Mr. ANDERSEN. I do feel that Minnesota has been in the forefront for a good many years in many of these problems relative to livestock. That is not saying that it is not also accompanied in that status by a good many other States. But Minnesota has always been very progressive in aiding and cooperating in these various programs for the benefit of better livestock.

Dr. SIMMS. And also, it has a good research program under way, laying a foundation for putting these principles into effect in the field.

NEW ANIMAL DISEASES

Now we have a third group of unsolved problems, new diseases. I hope nobody will ask me where they come from because I will have to admit that I don't know. We have diseases that just appear. We do not know where they come from. We find cattle, hogs, poultry, or sheep, are dying from something new.

Just 2 days ago some of our people attended a conference at Purdue University on what seems to be a group of new diseases in cattle. It looks as if there are about three of them that we just have not recognized in the past. They have been hidden from us, or they are something new in our livestock.

People in Iowa described one of these 2 or 3 years ago; the people at Purdue have been working with one since about a year ago now. They seem to be two different problems.

In California people are working with a third apparently new disease in cattle.

ORNITHOSIS IN TURKEYS

Ornithosis in turkeys showed up over a year ago. We knew that a similar disease was present in parrots and parakeets, called psittacosis in these birds, but we had not realized that an organism similar

to the cause of psittacosis in parakeets and other psittacene birds would prove a problem in turkeys; but it has.

HOG CHOLERA VARIANT

Just a few years ago we had a new hog-cholera problem. It was hog cholera but the virus was a little different so that the ordinary serum didn't protect hogs against that virus if it was used in vaccination. So essentially we had a new hog cholera in this country and we had to work with it—this was about 5 years ago—we had to do quite a little work to straighten out this new type of hog cholera.

BLUETONGUE IN SHEEP

Then we get diseases from other countries. Within recent years we found bluetongue in sheep in this country. It has been described and worked out very well in South Africa. We asked a research worker to come here from South Africa and spend some time with us and advise us on this disease.

We knew we had the disease in California, in Texas, and we had every reason to believe it was in Utah. Now we know it is in perhaps 8 or 10 of our States. It seems to be spreading.

The South Africans have done a lot of good work with it. We are taking advantage of all of their knowledge. We are doing some work with it ourselves. We put some of our funds into experiment stations in Texas and California to develop information on it.

LOSSES FROM ANIMAL DISEASES AND PARASITES

Mr. ANDERSEN. Doctor, how much did you tell us previously was the total amount of the loss to the people of the United States through the various diseases affecting livestock?

Dr. SIMMS. Estimates have put it all the way from a billion and a half to two and a half billion dollars. Most people I think settle on a figure of around $2 billion or $2¼ billion.

FEDERAL FUNDS FOR RESEARCH ON ANIMAL DISEASES AND PARASITES

Mr. ANDERSEN. Just how much are we expending from the Federal viewpoint on the control of such diseases plus research relative to them? You might put an answer to that in the record at this point.

Dr. SIMMS. Yes. The total in such research this year from "Salaries and expenses" is $2,103,600.

Mr. ANDERSEN. Having to do with animal diseases?

Dr. SIMMS. Yes, sir. That does not include the work at Plum Island on foot-and-mouth disease, a separate item.

Mr. ANDERSEN. It is part of what I want in the record.

Dr. SIMMS. Adding Plum Island, it makes about $4 million. Plum Island had $1,900,000 this year.

Mr. ANDERSEN. In that case you are expending a very small percentage of the potential loss, are you not? It is one-fifth of 1 percent, I believe.

Dr. SIMMS. Yes, it is one-fifth of 1 percent.

(The estimated cost of animal disease control and eradication for fiscal year 1955, exclusive of the cost of the accelerated brucellosis program, is $7,461,679.)

VACCINATION FOR BLUETONGUE

Dr. SIMMS. We are constantly having requests for help on these new diseases that I mentioned. When they show up, naturally we have requests. For instance, recently in bluetongue it developed that some ewes that were vaccinated in the early stages of pregnancy—vaccinated with vaccine that was produced according to the methods worked out in South Africa—came out all right apparently. But when lambing time came a good many of their lambs came dead.

A good many of those that didn't come dead had an affection of the nervous system so that they couldn't stand or if they could stand, they couldn't walk. When such lambs were killed and examined it was found their brains were damaged.

NEED FOR INCREASED FUNDS FOR DISEASE RESEARCH

Those things are coming along with the new diseases as well as with the old ones. We attempt to take care of the new problems and additional problems so far as we can within the budget that we have at hand. We are constantly shifting the funds. For instance, when bluetongue showed up we set out a little money for a cooperative project in Texas and another in California. We are also shifting some funds to work on ornithosis.

We do find if we are to give the service that the people are asking for, the service that we believe we should give, the service that we think will pay off in dollars and cents in the long run, it is necessary to ask from time to time for increases in funds. We have increases in the 1956 budget amounting all told to $261,000 to cover this work.

We plan to spend that money briefly as follows: About $80,000 of it would be for work with parasites. More of it will be on cattle parasites than on any other group, but some will be for other parasites such as those of poultry, swine, and so forth.

We are including an item on the disease phases of avian leukosis, which Dr. Byerly mentioned a while ago, an item of $20,000 to increase the work with this disease. This is a serious killer with hens in the laying house. We have made a lot of good progress on it. We think we should speed the work up and we are asking for a small increase there.

FIELD EXPERIMENT IN HOG CHOLERA ERADICATION RECOMMENDED

We discussed hog cholera with you in the committee 2 or 3 years ago. We believe the time has come when an eradication program should be very seriously considered. Many other countries live without hog cholera. If it comes in, they stamp it out the way we stamp out foot-and-mouth disease. This did not seem a very practical thing as long as we were feeding raw garbage because that was such a potent source of hog cholera. While we talked about it, and considered it, we were not too favorably impressed with the probability of actually doing the job.

But now that most of the States are doing some garbage cooking—many of them are cooking almost all of the garbage, and most of those that are not cooking a majority of the garbage are gradually increasing their cooking—it looks like the time is ripe to give consideration to the eradication of hog cholera.

We are proposing in the 1956 budget a field experiment on eradication of hog cholera. We are proposing to go into some States, set up a cooperative project, probably the States of Florida, Alabama, and maybe Indiana would be the three which might be considered in that, and try to determine through carefully controlled research procedures whether we can or cannot eradicate hog cholera.

Mr. ANDERSEN. Doctor, how would you select such States?

Dr. SIMMS. We would select the areas. In the first place, we would go into a State in which the State people themselves are interested in doing the job, where the farmers want it done. Florida wants it done, and so does Alabama. Both of those States have State programs and we have been invited to come in and cooperate with them.

Then we would want at least some work in the area where the disease first appeared, thinking that there might be some unknown carrier of the disease that lives in Indiana or Ohio where, according to the best information we have, hog cholera appeared about 120 years ago.

There might be some carrier there that wouldn't be present in Florida or Arizona, and maybe we could go to Arizona and stamp it out, but when we got back to Indiana, if it is the coon or squirrel, or something that is carrying the disease, maybe it would hold over there.

We are asking for some money to increase our work with bluetongue——

Mr. MARSHALL. How much were you asking for the eradication of hog cholera?

Dr. SIMMS. $56,000 on hog cholera. That is included in the $261,000.

ADDITIONAL RESEARCH ON BLUETONGUE AND BLOAT

We are asking for some money on bluetongue. We have squeezed out some money for that, but the problem is becoming bigger. We need to study the vaccine, we need to work out better methods of diagnosis, building our research, of course, on top of what the South Africans have already done. We would be lost with that disease if we didn't have the advantage of what those people have done in the past.

Some of the increase would be for additional work on bloat. We know that we have literally hundreds of thousands of acres in this country that are not producing up to their capacity because the farmers are afraid to plant clover in their pastures; they are afraid they will lose their cattle with bloat. I was quoted one time as saying that the cow that didn't bloat cost us more money than the cow that did, because the cow that does not is not getting full feed. Our farmers are afraid to give cattle all they can eat on a grass-clover pasture.

We are making good progress but we need to increase the amount of research. I might say we are using most of our share of this money in cooperative work with other experiment stations.

RESEARCH ON TOXICITY OF INSECTICIDES

Toxicity of insecticides is becoming an increasingly important problem as we are having more and more new insecticides, herbicides, and fungicides on the market. They are becoming more and more widely used and we must know which ones are safe to use on pastures, on

hay plants, on stored grains, and so on, so that we can feed our live stock with assurance that these are not poisonous.

LEPTOSPIROSIS IN CATTLE

We have asked for funds to start work on leptospirosis in cattle and swine. This disease has become quite well known in the last few years. We did not know we had leptospirosis in cattle until a few years ago. Some work has been done with it. We still do not know how widespread it is. We really do not know how much damage it is doing. But we do know that a fair number of reactors to tests for leptospirosis are being found.

We need to start at the bottom on that. We do not have the advantage we had on bluetongue of having somebody in South Africa or England who had done a lot of work on it. All told our request amount, as I said, to $261,000.

I think my statement is completed, unless there are questions.

Mr. MARSHALL. Mr. Andersen?

Mr. ANDERSEN. No, thank you. You have been very good in permitting us to question Dr. Simms as he has gone along. I have no further questions.

Mr. MARSHALL. Mr. Horan?

RESEARCH ON VESICULAR EXANTHEMA OF SWINE

Mr. HORAN. Did you touch on the work of the vesicular exanthema?

Dr. SIMMS. No, sir. We are cutting down on our work on that. We think that the crying problems have been pretty well answered. When the disease first appeared, we were faced with 3 or 4 very acute problems. One was how long will the virus live in the meat, because we realized that animals were going to market that were in the early stages of the disease and probably had the virus in their meat, and were being slaughtered and put through the regular channels of trade. That is one thing that we studied.

We found that the virus will live in the meat as long as that meat is fit for human consumption. As a matter of fact, we held some meat at higher than normal refrigerating temperatures until it was not fit for human consumption, and we still produced vesicular exanthema when we fed it to hogs.

We find virus will be present in the meat of the hogs before they show any symptom. So the most careful meat inspection will not pick these hogs out.

Another thing we studied was the temperatures that would be necessary for treating meat in order to make it safe. Before that was done we had to set up some sort of temperatures because we had to put out a regulation. We made a guess, knowing about what temperature would kill foot-and-mouth disease, which is a similar virus, and it proved that the regulations as they are written today do just about fit in with the facts that were established after the regulations were written.

We were very happy we did not have to make the regulation more stringent. If we had eased up the requirements, there would have been no kicks but there would have been if they had been made more stringent.

We have studied the presence of the virus in the infected animal, the length of time it lives in the infected carcass, we have studied the methods of spread from the hog. We are now cutting down on vesicular exanthema research because we think we have answered those acute questions.

Mr. MARSHALL. Thank you, Dr. Simms.

Dr. SIMMS. You are quite welcome, sir. I say again that we really enjoy meeting you people. I say that with all sincerity.

UTILIZATION RESEARCH

Mr. MARSHALL. We will now take up "Utilization research."

Dr. Hilbert, do you have a general statement?

Dr. HILBERT. I have a brief statement that the committee might be interested in. It is with regard to some administrative and organizational changes that have taken place during the past year.

Mr. MARSHALL. I am sure we will. You may proceed as you wish.

ADMINISTRATIVE AND ORGANIZATIONAL CHANGES

Dr. HILBERT. Mr. Speh, who was Assistant Director of Utilization Research, and previous to that, Assistant Chief of the Bureau of Agricultural and Industrial Chemistry for many years, reached the age of statutory retirement in January and has retired. He testified many times before this committee. He spent 28 years in the Department and became an international expert in the field of naval stores on pine gum and turpentine, and a national expert in the field of utilization of agricultural commodities. We are sorry to lose him.

Mr. MARSHALL. This committee appreciates the enviable record that he has made, and we wish him all kinds of happiness in his retirement.

Dr. HILBERT. I am sure he will be glad to know that.

Dr. Matchett has taken Mr. Speh's place. He was formerly Assistant Chief of the Bureau of Agricultural and Industrial Chemistry and is an expert in the food field. For the past year he has been Chief of the Washington Utilization Research Branch. He also has testified before the committee. You all know him.

There has been one other change in the leadership of our branches. Dr. R. T. Milner, who has been Chief of the Northern Utilization Research Branch since 1948, when he succeeded me, has resigned to accept a position as head of the food technology department at the University of Illinois. Dr. Milner has been replaced by Dr. Maclay. Dr. Maclay was head of the field crops work at the Western Utilization Research Branch and has transferred to Peoria to assume the position held by Dr. Milner. This change was made last May.

The other change is an organizational one. In the reorganization of the Department about a year ago, the dairy utilization research work and the meat utilization research work were transferred to my jurisdiction. At that time we set up a temporary Washington Utilization Research Branch in order that the change could be made more smoothly.

Two weeks ago Dr. Shaw announced that the administration of the Washington utilization Research Branch would be transferred to the Eastern Utilization Research Branch. That freed Dr. Matchett to take the place formerly held by Mr. Speh.

There is one other general item I think you may be interested in. During the past year 43 patents were issued to the utilization research branches and 71 applications were filed for patents.

I have with me a copy of the list of patents that were granted to the members of the utilization research branch if you would care to have it placed in the record.

Mr. MARSHALL. That will be placed in the record at this point.

(The information referred to is as follows:)

United States letters patent issued to the Bureau of Agricultural and Industrial Chemistry (now Utilization Research, Agricultural Research Service, calendar year 1954.)

Patent	Patent No.	Date of issue
Process for making N-(1, 1-dimethyl-3-hydroxybutyl)-lactamide	2,665,308	Jan. 5, 1954
Method of treating rubber obtained from rubber-bearing plants	2,665,317	Do.
Alkaline cleavage of pseudosapogenin oxidation products	2,666,770	Jan. 19, 1954
Flameproofed fibers aminoalkylated cellulose derivatives	2,668,096	Feb. 2, 1954
Method of making nonswelling starch granules with diisocyanates	2,668,169	Do.
Protein adhesives	2,668,766	Feb. 9, 1954
Conditioning of limed pear waste	2,670,289	Feb. 23, 1954
Substituted gluconamides	2,670,345	Do.
Polymerization process using hydrogen fluoride	2,670,361	Do.
Lubricating-oil compositions	2,671,760	Mar. 9, 1954
Reaction of wool with beta-propiolactone and water	2,672,397	Mar. 16, 1954
Low-methoxyl pectin gels and method of making same	2,673,157	Mar. 23, 1954
Method of preserving shell eggs	2,673,160	Do.
Preparation and use of polysaccharide-producing enzyme	2,673,828	Mar. 30, 1954
Production of organic acids	2,674,561	Apr. 6, 1954
Deodorization process	2,674,609	Do.
Injector for injecting auxiliary liquid to the fuel of internal-combustion engines	2,675,788	Apr. 20, 1954
Starch saccharifying enzymes high in maltase activity	2,676,905	Apr. 27, 1954
Lipase preparations	2,676,906	Do.
Vinyl chloride polymers plasticized with alkyl carbonates of glycol lactates	2,676,941	Do.
Hydrogenation derivatives of difurfural-acetone	2,676,972	Do.
Preparation of partial glycerides	2,680,090	June 1, 1954
Inhibition of color formation in N,N-Bis (2-hydroxyethyl) lactamide	2,680,685	June 8, 1954
Segregation of potato tissue of reduced browning tendencies	2,681,285	June 15, 1954
Process for producing textile cellulose sulfo-ethyl ether cation-exchange material	2,681,846	June 22, 1954
Process for flameproofing textiles with polyphosphonitrilic ester	2,681,295	June 15, 1954
Card sorting device	2,683,458	July 13, 1954
Process for modifying glyceridic fats and oils	2,684,377	July 20, 1954
Process for fractionating glyceridic mixtures obtained as hydrocarbon solutions	2,684,378	Do.
Stabilization of vinyl resin monomers	2,685,597	Aug. 3, 1954
Stabilization of dehydrated vegetable material	2,686,123	Aug. 10, 1954
Stabilization of forage crops with hydroquinone derivatives	2,686,124	Do.
Process of canning rice	2,686,130	Do.
Production of dextransucrase	2,686,147	Do.
Enzymatic hydrolysis of seroidal saponins	2,686,752	Aug. 17, 1954
Suspensions of polymeric flameproofing compositions containing phosphate and halomethyl groups	2,686,768	Do.
Flameproofing aqueous suspensions of halomethylated phosphates	2,686,769	Do.
Process for alkali-refining crude natural oils	2,686,796	Do.
Process for the production of substantially skin-free peanut kernels	2,687,155	Aug. 24, 1954
Production of mushroom mycelium by submerged culture in a liquid medium	2,693,665	Nov. 9, 1954
Apron-splicing device	2,694,436	Nov. 16, 1954
Purification of canaigre tannin with aqueous methyl ethyl ketone	2,694,725	Do.
Process for making flameproofed dyed aminized cotton fabrics	2,695,833	Nov. 30, 1954

Dr. HILBERT. That concludes the general statement that I have to make. If you would care to have me discuss the progress made and the accomplishments of the various commodities I would be happy to do that.

Mr. ANDERSEN. I think that would be a nice procedure if Dr. Hilbert could do that and bring to our attention the developments which he considers might be of the most interest to the subcommittee.

Mr. MARSHALL. That will be fine.

Dr. HILBERT. The first commodity or group of commodities is cereals and forage crops.

PARBOILED WHEAT AS RICE SUBSTITUTE

During the past year we have been working cooperatively with an industrial company on parboiled wheat. Parboiled wheat is called boulgour which is an Armenian term. Boulgour has been known for centuries, but there are only two small companies producing it in the United States for use in the Armenian restaurants.

Boulgour is made by parboiling or steaming wheat and then dehulling by a pearling operation. Properties of the parboiled wheat, that is of boulgour, are such that it can be easily converted into a palatable condition by merely heating in water. It is used at times as a substitute for rice. The flour company that we have been working with is interested in developing a domestic market..

In the Pacific Northwest a quite intensive promotional campaign has been undertaken by wheat-grower organizations and by this milling concern.

This milling concern also feels there is a large volume market for boulgour in India and Japan, that is, in the Far East. It is their thought that this substitute for rice would be available to Far Eastern populations at a price lower than that of rice. That is the objective of the work.

We are engaged in determining the optimum conditions for producing boulgour. We are also concerned about the possibility of the product becoming rancid. The reason why underdeveloped countries are interested in it is that they are short on fuel. In the home they need to cook their food using a minimum amount of fuel. And that can be easily done by boiling the product in water.

That is one reason why rice is so popular in the Orient. It is so easy to prepare.

The problem of the development of rancidity in boulgour is an important one, particularly if the product is to be shipped abroad. We know that if it is shipped in bags the rancid flavor odors permeate through the bag. However, insects can enter the bag under these conditions. On the other hand, in a completely closed container the rancid odors are retained. We are engaged in searching for an antioxidant that can be added to the parboiled wheat which will prevent rancidification. We are also engaged in developing a continuous process for producing boulgour. A continuous process would be cheaper than the batch process which is used at the present time. Boulgour appears to be a very promising outlet for wheat, one which has not been fully exploited in this country in the past.

MILLING CHARACTERISTICS OF WHEAT

Another development concerns the work that we have done to speed up the selection of rust-resistant wheats having excellent processing characteristics. At the present time it takes several years for the geneticist, after he has developed a new wheat that looks good to him, to produce enough so that it can be milled to test its processing characteristics. In the past some wheats with excellent agronomic characteristics after large-scale production had taken place were

discovered to have poor milling characteristics. They could be only sold at a discount.

This new method that we have developed for determining the milling characteristics of wheat can be carried out on 3 or 4 kernels, and seems to have a great deal of promise.

If a wheat has poor milling characteristics the geneticist can now discard it rather than spend several years growing enough for a milling test.

Geneticists are now using the test to determine the milling ease of new varieties of wheat.

PROBLEMS IN STORAGE OF WHEAT

One other problem on which we have had considerable success in the past year involves the storage of wheat.

It has been well known that wheat containing about 14 percent moisture at times can be stored satisfactorily and at other times deteriorates.

We have found that some wheats when stored will develop a relative humidity of about 70 percent. It is well known that if the relative humidity is 70 percent, wheat can be stored for a long time without any deterioration, that is for a year or two.

We have found on the other hand that some wheats that have 14 percent moisture develop a relative humidity of 80 percent, rather than 70 percent, and under these conditions the wheat tends to deteriorate rather rapidly.

The reason for this curious behavior of wheat is this: Wheat that is dried to 12 percent moisture, as for example in North and South Dakota, and then regains a moisture content of 14 percent, is stable. What that has been harvested at 16 percent moisture, and then dried to 14 percent, is unstable. The relative humidity depends on the manner in which the wheat has been dried. This information, of course, is of great value to the producers, to grain elevators, and to the industry, and particularly timely I think in view of the large quantities of wheat that the Department has stored.

Mr. MARSHALL. Has Commodity Credit made any use of this information?

Dr. HILBERT. They will be made aware of it. This information was obtained about 1 or 2 months ago.

DEVELOPMENTS IN RICE UTILIZATION

The next item I would like to discuss is rice. The rice producers for many years have felt that one reason that rice is not very popular in the northern part of the United States is due to the difficulty that the housewife has in producing a rice that is flaky and rather dry. Too frequently housewives in the North are apt to prepare rice that is rather pasty with decreased palatability.

Rice producers have urged us to develop methods for converting rice into a form that the housewife can easily cook at home and without any difficulty produce the type of flaky rice that you so frequently find in either Chinese restaurants or in southern households. For that reason we undertook work to produce instant rice and canned rice.

We developed the optimum conditions for producing canned rice. During the past year a canning company in Louisiana has undertaken

the production of this canned rice. I have a sample of it here if you would care to see it.

The rice at the seam of the can is sometimes stained and that portion of the rice should be removed. I think you would find that it is as fine a rice as you have ever eaten. We think it might well become very popular.

WAXY RICE

One other development on rice concerns waxy rice. With waxy rice, when the kernel of rice is fractured, the fracture has a waxlike appearance and for that reason it is called waxy rice.

Waxy rice is quite different from ordinary rice. When treated with iodine it gives a red stain rather than the blue stain of ordinary rice. It also has quite different cooking characteristics. Waxy rice is used in China for making cookies. It tends to produce a very glutinous, gelatinous product, more like wheat than ordinary rice.

We have found that powdered waxy rice, when used in place of starch, in precooked foods, will form gravies or custards that do not break, or change in physical characteristics.

One of the big problems of the precooked frozen-food industry has been searching for a product that will form smooth gravies which when frozen and then thawed will still remain smooth. The waxy rice is now used by one of the big canning companies and by the airlines for this purpose. They include it in their specifications of precooked foods. And the Quartermaster Corps is including it in its specifications for precooked foods used in in-flight feeding.

Waxy rice can be grown in California and offers an opportunity for producers to grow it as a replacement for ordinary rice.

PRESERVATION OF CAROTENE IN ALFALFA

In the preservation of carotene in alfalfa, we have made striking progress during the past year. One of the serious problems of dehydrated alfalfa producers has been that the carotene, which is a precursor of vitamin A, decreases on storage. As much as 75 percent of the vitamin A is lost if the alfalfa is stored for 6 months. This is hurtful to the dehydrators because alfalfa is sold on the basis of its carotene or vitamin A content.

Over the years we have developed an antioxidant, a chemical, that will slow down tremendously this rate of deterioration of carotene or vitamin A. Last year I told the committee that one of the large alfalfa dehydrator cooperatives was using this product as a preservative for carotene but since it is a chemical which is added to a feed we had to get complete evidence of its nontoxicity. That was obtained during the past year.

The Food and Drug Administration has now given clearance for the use of this antioxidant which means it can be sold across State lines. They have, however, not cleared it for use in feeding of cattle and that is a job to be done at the present time.

One other interesting development on alfalfa has been that the same antioxidant which preserves the vitamin A also preserves the major portion of the yellow pigment in alfalfa. The feed industry, particularly the poultry industry, is very interested in using alfalfa which is high in this pigment which is called xanthophyll. The pres-

ence of a large amount of xanthophyll in the feed will insure a yellow skin on poultry and yellow legs. It has been found that housewives much prefer yellow-colored poultry to the pale-white poultry.

ROLE OF SAPONIN IN BLOAT

I called the attention of the committee last year to the work that we were doing on characterizing the component of alfalfa which is responsible for bloat. A year ago I mentioned that we had obtained strong evidence that one of the factors in bloat is saponin. During the past year, in cooperation with the Animal and Poultry Husbandry Research Branch and several of the State experiment stations, we have shown conclusively that saponin is one of the important factors that produce bloat.

One of the problems which we have run into in the past year in carrying on these experiments on cows, is that enormous quantities of saponin are used, as much as 3 ounces on an animal. We have had underway pilot-plant experiments to produce about a hundred pounds, so that this saponin can be widely tested by animal physiologists throughout the country. We have run into pilot-plant difficulties. At the present time we have been able to produce only about 5 pounds, but it is a problem we hope we can overcome in the next year or so. But what is also needed in this alfalfa research is the development of a simple method for determining saponin. We are engaged on that. This method then could be used by the plant geneticists as a basis for breeding out the saponin or bloat-producing agent in alfalfa.

CORN

I would now like to discuss our work on corn. We have discovered that gums can be produced from one of the byproducts in the corn wet-milling industry. The corn wet-milling industry is the industry that converts corn into starch, dextrose, sirups, and feed. From one of the byproducts we have developed a product which has all of the properties of imported gums such as cherry gum, and gum arabic. Two commercial companies are evaluating commercially not only the procedure which we developed for producing this gum but also in testing its replacement for imported gums.

Still one other development in the field of corn concerns the work that we have undertaken with breeders. Several years ago I called attention of the committee to the fact that cornstarch consists of two components. From one of those components we can produce an excellent film which has many of the characteristics of cellophane. The proportion of this component in starch is about 30 percent.

The other component of starch has no film-forming characteristics at all. We developed processes for separating the 2 but industry has felt that they have been too costly to permit them to go ahead and separate these 2 components and use the one called amylose for producing films.

In the meantime through cooperative experiments with the geneticists we have been searching for varieties of corn that have a very high content of amylose, the film-forming component.

During the past year we have discovered a hybrid corn that has twice as much of this film-forming component as the ordinary com-

mercial hybrid. This does offer an opportunity for developing a specialized corn which would have industrial uses in the production of films. These films——

Mr. ANDERSEN. I was going to ask you about the commercial possibilities of this development, Doctor.

Dr. HILBERT. I think they are excellent. The difference between the amylose film and cellophane is that amylose film is digested in the body because it is made of starch. For that reason it has potentialities for the coating of poultry, meat, and cheese. At the present time paraffin, which cannot be digested, is used for coating cheese. It may have many food uses, and there is not another film that we know of that has this property of being digestible in the body.

Should I continue with cereal and forage crops?

Mr. MARSHALL. Yes.

WORK ON UTILIZATION OF OATS

Dr. HILBERT. Two years ago for the first time we undertook work on oats. When the regional research laboratories were originally established we were requested to devote primary attention to corn and wheat in the cereal field. As oats are an excellent replacement crop for wheat we felt it would be desirable to undertake work on utilization of oats.

The work that we have undertaken involves cooperation with the Iowa Experiment Station. They have been producing a large variety of new types of oats. We in turn have been determining the composition, particularly the vitamin composition of the oats with the aim of finding whether any of the newer varieties are rich in certain vitamins. If so, they would have a higher feeding value than the oats that are being produced at the present time. We have found that there is a relationship between genetic characteristics and the quantity of niacin—nicotinic acid, which is one of the important vitamins—and also riboflavin, another one of the important vitamins required for nutrition of poultry and swine. This, of course, means that the breeder can use the varieties of oats which are rich in these two vitamins to breed oats which are still richer.

DEXTRAN

A year ago I called attention of the committee to the work that we have been doing on dextran. This is a blood-plasma substitute. Last year I told you that the process that we had developed for producing dextran or this blood-plasma substitute has been used by three commercial companies. These three commercial companies were producing dextran for the Department of Defense which has been stockpiling this blood-plasma supplement.

In the meantime civilian hospitals have started to use dextran. During the past year, that is within the last 2 months, we have closed out practically all of our work on dextran. We had a team of 50 men put on this problem in 1950 when the Korean war started. There are still problems that have to be solved. We feel, however, in view of the urgency of other cereal and forage problems that it is desirable for us to close out our work on dextran.

Mr. MARSHALL. You carried this experiment out at Philadelphia?

Dr. HILBERT. No, sir; the Peoria Research Laboratory.

Mr. MARSHALL. Would you tell us how long you worked on that one particular project?

Dr. HILBERT. We started to work on that particular problem about August or September 1950, when we shifted 50 men over to that project. You will recall the Korean crisis started in June around June 24, as I recall it. The President requested all Federal agencies to shift their programs over to defense programs. This is one of the major projects which we undertook.

During the last year we have gradually been tapering off and closing out all of our work on dextran with the exception of one line project on which two men are engaged. In the meantime we have received a request from the National Research Council which is located in Washington, and which is advising the Department of Defense on many fields of work to continue our work. But because of the urgency of cereal and forage crops problems it would be advisable for us to curtail this field of work. The National Research Council has recommended that the Department of Defense finance the specific problems to which they believe we should devote further attention.

CHEMICAL FROM CORN SUGAR

We have developed a new process for producing a chemical from corn sugar. This chemical, reductone, from corn sugar has the properties of vitamin C. Vitamin C, in addition to being an excellent vitamin, and needed in nutrition, is also an excellent antioxidant, and it is used for that purpose. For example, it is used to prevent the discoloration of freshly cut peaches. Adding vitamin C to peaches which are to be frozen will prevent this discoloration from developing. The product that we have produced from corn sugar has better antioxidant properties than vitamin C. We have estimated that its cost would be only a fraction of that of vitamin C. We are testing it as an antioxidant in various fats such as lard and butter.

One of the problems with lard and butter is the ease with which they become rancid. We feel that this chemical from corn sugar will enable us to solve this rancidity problem, which is especially serious in the case of butter. At the present time no antioxidants are being used to increase the storage life of butter.

PROTEIN CONTENT OF CORN

The feed industry has believed for a long time that the protein content of the open-pollinated varieties of corn produced 20 years ago was about 2 percent higher than our present hybrid corn. They have been agitating practically continuously for the development of hybrid corn that has a higher protein content. This is a problem to which we have given a great deal of attention. We have found through statistical analysis that the protein content of the open-pollinated corn produced 20 years ago and the hybrid corn produced at the present time, have about the same protein content. Apparently the reason that the industry came to this erroneous conclusion is that much of the corn grown during the extended drought of the thirties was of the open-pollinated varieties. We now know that corn grown when the soil is low in moisture has a higher protein content that corn grown under adequate moisture conditions.

In other words, the behavior of corn is somewhat similar to that of wheat. Wheat produced in wet areas has a rather low protein content and wheat produced in dry areas has a high protein content. This information will be helpful to the industry from the standpoint that they will no longer be disturbed that the hybrid corn we are producing at the present time is inferior to the open-pollinated corn which was grown 20 and 30 years ago.

VITAMIN B-12 FROM CORN

Last year I called the attention of the committee to the process which we had for producing vitamin B–12 from corn. This process was adopted by the industry about 2 years ago, and over the intervening period there has been a gradual increase in the number of companies that are using this process for the production of vitamin B-12. Vitamin B–12 is one of the key vitamins which led to the recent rapid increase in poultry production. Less feed is required to raise a pound of poultry if there are adequate amounts of vitamin B-12 in the diet.

STUDIES TO RETARD STALING OF BREAD

One other problem that we are devoting a great deal of attention to in the field of cereals concerns the staling of bread, and developing methods for prolonging its freshness. During the last several years the Grain Advisory Committee of the Department and also the baking industry has urged us to undertake work on this problem. The baking industry believes that if bread can be maintained in a fresh condition for 3 to 4 or 5 days it will lead to an increase in consumption of bakery goods. Twelve hours after baking, staling takes place rather rapidly. Consumer studies have shown that the first half of a loaf of bread is eaten at a much faster rate than the last half of the loaf of bread.

There are two approaches that we are taking. One of them is a fundamental approach to search for compounds which when added to bread will slow down the rate of staling. For instance, hydrolyzed starch is one product that we are investigating for this purpose. The other approach is the freezing of bread.

The Cold Storage Advisory Committee has urged us to attack this latter phase of the problem. We have shown that immediately after the bread comes out of the oven staling takes place very rapidly as the bread is cooled to about 32°, the freezing point of water. Below that temperature staling proceeds very slowly, and at minus 10° bread will remain fresh for a period of about 2 months.

We are investigating methods for speeding up the rate of cooling of the hot bread until it gets in the freezer. We found that the air blast method is better than the static method.

The baking industry is concerned that it may be required to operate on a 40-hour week—at present bakers work 6 or 7 days a week in order to ensure the freshness of their products. It will be easy for them to go over to a 40-hour week if they have a procedure for preventing the staling of bakery products.

We feel that although freezing will increase the costs, perhaps the savings made by the baking industry by working on a 40-hour week, and the increased consumer acceptance of fresh bakery products, will compensate for the increased cost of freezing.

Would you care to have me discuss the work we are doing on cotton and other fibers?

Mr. MARSHALL. Yes.

COTTON PROCESSING EQUIPMENT

Dr. HILBERT. We are devoting a great deal of attention to developing improved and new equipment for processing cotton.

It is more difficult to process cotton than it is to process synthetic fibers. One reason is that cotton when it is harvested has a great deal of trash and dirt which has to be removed. The other reason is that cotton fibers are nonuniform. They vary in diameter and in length. On the other hand synthetic fibers are uniform in diameter and in shape.

From the standpoint of processing, the cotton industry is at a disadvantage compared to the synthetic industry.

Because of the importance of the problem we have devoted a great deal of attention to improving present equipment or developing new equipment. We have had a great deal of success in this work. At the present time we have ready for commercial evaluation—as a matter of fact it is being evaluated—a new device for stripping cotton from the card. The card is about the seventh piece in the line of equipment used in a textile mill to process cotton. All told there are from 25 to 30 different types of cotton-processing equipment in an average mill.

The function of the card is to aline the cotton fibers in a parallel position. They are all tangled up when they reach the card. The card consists of a circular drum which is about 6 feet high and has 2 million teeth. As the cotton fibers pass over the card they assume a position parallel to each other. The fibers come in on one side of the drum and flow over the top of it and are combed during the operation. When they come out, the cotton is in the form of roving, a very loose yarn in which most of the cotton fibers are in a parallel position.

The card is one of the bottlenecks in a textile mill. The average size textile mill has about a hundred cards. Each one costs up to $3,000 or $4,000. They are extremely heavy. The reason they need such a large number is because the capacity of the card is rather low. It can handle only about 10 pounds of cotton per hour.

During this operation of bringing the fibers in a parallel position to each other a rather large proportion of the cotton fibers are caught in the teeth and stay there. As these cotton fibers build up on the card the uniformity of the cotton sliver, or rope-like product that comes out of the end, varies.

Every 4 hours they have to stop the card and then they either remove all the cotton that has been impacted on the machine mechanically, or by hand labor. It takes about 10 to 15 minutes to remove this cotton. It is waste cotton for which the mill, of course, gets only a low return.

DEVELOPMENT OF A CONTINUOUS COTTON STRIPPER

One of the problems that the industry has urged us to undertake, including the Cotton Research Advisory Committee, is to develop a simple method for removing this impacted cotton.

We have invented a continuous stripper; that is, an attachment to the card that removes the cotton almost continuously as it passes back and forth on the drum.

We have found that through using this stripper, instead of stopping the card every 4 hours it is only necessary to stop it every 80 hours for cleaning.

We have also found that there is actually 10 percent less cotton waste using the continuous stripper. From the standpoint of lowered costs this amounts to a saving of $1.90 for every 60 hours that the cards are in operation. Since there are 100 cards in a mill, it would amount to a saving of about $190 every 60 hours.

This continuous stripper is now being evaluated by the Johnston & Johnston Co. which is using it under very drastic conditions; that is, very high production rates. From that evaluation we will be able to determine whether it is ready for use on an industrywide basis or whether we have to make some modifications.

Another piece of equipment on which we have made a great deal of progress is an attachment for a loom.

About 3 or 4 years ago I called the committee's attention to work that we were doing on this problem.

HIGH-DENSITY COTTON FABRIC

At that time we were concerned with producing high-density fabric; that is, so dense that it will be wind and water resistant.

So dense that water will not pass through the cloth. This is a problem that the Department of Defense is very keenly interested in. The Air Force is interested from the standpoint of flight suits. The Marine Corps would like to find out whether or not it is possible to make lightweight raincoats from this high-density fabric.

The attachment we produced 3 or 4 years ago turned out to be rather cumbersome. It had such a pounding action on the loom that we decided to modify it.

We have gone through two modifications and now have a third one. This third—the one that we now have—we feel is practical. It is being evaluated by 30 different textile mills and 2 manufacturers of cotton-processing equipment have indicated that they are ready to accept orders and to produce it.

The cost of this loom attachment is about $125. It is not necessary to modify the loom at all. All that is necessary is to add this attachment to it. We are looking into the various end uses for this high-density cotton fabric. We feel it has a promise for production of tents, awnings, for outdoor fabrics, and for raincoats.

This [holding up sample] is a piece of the high-density fabric. You will notice it is a very beautiful product. It has a nice handle. It is not stiff. Some industries felt that it might be too stiff and board-like. There is no need to add any wax or paraffinlike product to make it wind resistant. This fabric will hold water. It will not let water go through for a matter of hours, which indicates it could be used for raincoats. As the fabric can be dyed in beautiful shades of color we believe that women might be very interested in this type of raincoat.

EQUIPMENT FOR CLEANING COTTON

Equipment to improve the cleaning of cotton is receiving a great deal of our attention. Since the mechanical harvester has come into use for harvesting cotton, the textile industry has been confronted with a serious problem of more extensive cleaning of cotton. Mechanically harvested cotton has much more grass, leaves, and other material in it.

For that reason the Cotton Advisory Committee has urged us to concentrate on the development of improved equipment for cleaning cotton so that we can cut down on the cost of processing.

A year ago I called your attention to the fact that we had developed one piece of equipment which enables a textile mill to open up a bale of cotton much faster and fluff the cotton to a greater extent than with existing equipment.

We have actually found out that in the machine that we developed, there is also extensive cleaning. For example, about 5 percent of the dirt and trash is removed right in that operation. That is because we fluffed out the cotton to a greater extent than ordinarily.

At that time I indicated to you that three companies were producing these openers. Over the past year the use made by industry of these openers have speeded up tremendously. At the present time we estimate that probably 2 million bales of cotton are being opened with the peice of equipment that we have developed.

The openers are being purchased now at a rate equivalent to processing approximately three-quarters of a million bales of cotton a year. The total amount of cotton processed every year is about 8 or 9 million bales. Thus, apparently our openers are being used at the present time for about 25 percent of our domestic cotton consumption.

Industry has been carrying on cost studies with respect to the savings that are made using this SRRL opener. The savings are estimated to be about 50 cents to a dollar per bale of cotton. The savings in processing 2 million bales is therefore between $1 million and $2 million annually. This is a very significant development, as a matter of fact, one of the most important developments that has come out of the Southern Regional Research Laboratory.

COTTON CLEANING DEVICES

The industry has urged us to develop an auxiliary cleaner that is adapted to the opener that we have produced. The cleaning devices that are being used in industry at the present time are adapted to the old-style opener. In order to adapt our opener to their present cleaning devices it is necessary to compress the highly fluffed cotton to work it through existing cleaners. In compressing it, the efficiency of cleaning it is cut down. We have had models fabricated of an auxiliary cleaner which is adapted to our opener.

One other type of equipment with which we have done a great deal of work is a combined opener and cleaner. At the present time, a textile mill has an opener followed by 2 or 3 machines for cleaning cotton and then another machine called the picker. The cotton then passes through the card, which I have already talked about.

What the industry would like to have is a combined opener and cleaner that would replace the present openers and the 2 or 3 cleaning

machines. We have made a great deal of progress in developing such a combined opener and cleaner. It will remove about 35 percent of the trash in 1 operation. We are now developing a mill scale model that we can actually test out using the production rates of a mill. After that the combined opener-cleaner would be evaluated under operating commercial conditions.

COTTON BANDAGES WITH TWO-WAY STRETCH PROPERTIES

A year ago I called your attention to the fact that the Army was purchasing large quantities of a two-way stretch cotton bandage that we had developed. These bandages were produced according to Army specifications and were actually used under practical operating conditions. In the meantime 1 of the 3 industrial concerns, producing two-way stretch bandages for the Army has started to produce the bandage for use by civilians.

This is a sample of the product. They have called it Kling which is an excellent descriptive name for it. You will notice on unrolling it, the clinging properties of the fabric. In wrapping it around the finger, it is not necessary for someone to hold the bandage in place.

On unrolling it, it still clings. This can't be done with an ordinary cotton bandage. This company indicated to us they are going to start their publicity campaign in about 2 or 3 weeks.

They indicated also that they would acknowledge the contribution that we made in the development of this product. We believe that this bandage will replace the standard type of bandage which is now being used, because this is so much easier to handle.

TWO-WAY STRETCH FABRICS

Because of this interesting property of two-way stretch we have been searching for other uses. We have produced two-way stretch fabrics. Here is a sample of that fabric. The standard type of fabric, which is the one on the bottom, has no stretch to it at all, whereas the top fabric has a considerable stretch to it—much more so than the other one.

Mr. HORAN. Is this shrunk?

Dr. HILBERT. What we do is to subject this fabric to a mercerization treatment. In the common mercerization treatment the fabric is stretched to prevent it from shrinking. In the process we use, it is not subjected to any tension. It is deliberately permitted to shrink. When it does shrink the yarns crimp, tend to curl up, and that is why it has the two-way stretch. You can straighten it out and stretch it.

One of the interesting uses that has been developed for this two-way stretch fabric, is as a backing for plastics which are used in upholstery furniture, or in automobile seat covers.

Many automobiles now have plastic seat covers. One of the disadvantages of the plastic is that it does not have sufficient resilience. When this two-way stretch fabric is a backing for the plastic, it does not tend to crack in the manner that the ordinary plastic does.

We understand that that type of product is actually being produced commercially at the present time.

IMPROVED MATERIAL FOR FISH NETS

We are working on products to improve fish nets. One of the disadvantages of commercial fish nets made from cotton is that they deteriorate in salt water very rapidly. It is necessary to tar the nets which of course increases the weight. The synthetics and nylons have been taking the market away from cotton.

One of the synthetic fibers that we have produced from cotton can be used for this purpose and has a much longer life than ordinary cotton. It is called acetylated cotton. It is being tested out by fisheries.

PROCESSING CHARACTERISTICS OF NEW TYPES OF INTERSPECIES COTTON

We have been carrying out work with the plant geneticists of the Field Corps Research Branch on the processing characteristics of new types of interspecies cotton. You have no doubt been informed about this by the Field Crops Research Branch.

Interspecies cotton is of considerable interest because they have much greater strength than ordinary cotton. The question, however, has been what about the processing characteristics? Can interspecies cotton be processed with the same ease as ordinary cotton?

We have had made available to us Pima S–1, which is a new Egyptian-type cotton, with great deal of promise.

At the present time the thread manufacturers in the United States are using primarily Egyptian cotton because it has a greater strength than the ordinary type of American cotton we have been producing.

We have found that the yarns made from Pima S–1 cotton have 25 percent more strength than ordinary cotton. They can be elongated, stretched to a greater degree, have less neps, and can be just as easily processed, more easily processed than the Egyptian cotton that we have been getting.

This will be one of our coming cottons.

EQUIPMENT FOR TESTING COTTON

We have undertaken considerable work on the development of new testing equipment—simple testing equipment that the cotton textile industry can use in evaluating the cotton that they have purchased. One of the problems has always been to develop a simple instrument for measuring the strength of cotton. There has always been a great deal of debate as to what is the best instrument and how should the strength measurement be carried out.

For example, in some instruments the jaws are right next to each other when they hold a bundle of fibers. There is a question whether the jaws should be right next to each other, or should be spaced apart by an eighth of an inch or a quarter of an inch. We have let a contract with the University of Tennessee which has one of the outstanding professors in developing such equipment in the United States.

The instrument which he has developed is now being produced and measures accurately not only strength but also elongation. Elongation is the stretch of a fiber. Elongation is very important, particularly in tire cord. Tire cord is subjected to tremendous impact in rubber tires. The fiber must be tough.

We have just heard within the last month or so that one of the French manufacturers of cotton tire cord, which has been using Egyptian cotton exclusively has discovered that one of the cottons we are producing, a Delta cotton, acts just as well in cotton tire cord as Egyptian cotton. This Delta cotton did not have the strength that the Egyptian cotton had. Using the type of information that we have developed on the importance of jaw distance and the relationship of elongation and strength, they now have a good criterion of the suitability of cotton for the production of tire cord. They indicated to us that in the future they would purchase this Delta American cotton rather than Egyptian cotton because it is much cheaper.

This French concern uses the equivalent of 40,000 bales of cotton. This is an interesting development.

Should I discuss the proposed increase for cotton at this time or should I complete the statement on progress?

Mr. MARSHALL. We would like a continuation of your statement on progress.

Dr. HILBERT. I will now discuss our work on fruits and vegetables.

FRUIT POWDERS AND FRUIT CONCENTRATES

Last year I mentioned to you the work that we have been doing on fruit powders and fruit concentrates. I indicated that we had developed a process for making orange powder and that an industrial concern was considering constructing a plant for producing orange powder. A plant has now been constructed and it started operation about a month ago. I understand it intends to sell its product to institutions rather than to put it in the hands of the retail consumer.

Over the past year we have made striking progress on tomato powder. A year ago I indicated that we still had some problems to work out on tomatoes. We think we have solved most of those problems. We now have a product which can be readily reconstituted by simply stirring in water. It has a flavor which is practically the same as that of canned tomato juice.

We are working with the producers on the west coast in making 3 to 1 tomato concentrate. One company has produced a large amount of it. A market evaluation has been made and it has been found it is very popular.

Mr. HORAN. That is dry?

Dr. HILBERT. That is a 3 to 1 concentrate. It has about the same consistency as 3 to 1 orange concentrate.

Mr. HORAN. It is a wet concentrate?

Dr. HILBERT. Yes, sir.

Mr. HORAN. You can't make a dry concentrate, can you?

Dr. HILBERT. Yes, in the form of a powder. Most fruits and vegetables have about 90 percent water. To produce a powder all of the water must be removed.

Mr. HORAN. You call that a concentrate?

Dr. HILBERT. Yes, the tomato powder would be called a concentrate. I think it is more specific to call it a powder, because the term "concentrate" also includes 3 to 1 concentrates which are liquid.

Almost every powder we have worked with has a special problem of its own. One would ordinarily think that the same process used for making orange powder could be used for making lemonade powder,

but that hasn't turned out to be the case. For instance, in the case of tomato powder, we find that all of the flavor is in the powder. None of the flavor is lost in concentrating. But in the case of orange, grape, and lemon juice, all the flavor disappears on drying. We have to recapture that and then add that back to the powder.

Another concentrate which has been adopted commercially, is strawberry concentrate. One of the problems of strawberry producers is that while 90 percent of the strawberries can be marketed as such, 10 percent of the crop is in the form of culls. They have excellent flavor but are misshapen.

Processors and producers have been desirous of the development of a process for converting culls into a concentrate. The concentrate could then be used for the production of jams or jellies. We have developed a process for producing a 6 to 1 concentrate. We had to recapture the flavor which was lost in concentration, and return it to the concentrate.

One of the largest producers and processors in the West had this process in operation for the past year and made tremendous savings in transportation. It has been very highly received in the East where it is used for the production of jams and jellies.

The problem of producing storable, palatable powders was originally undertaken at the request of the Army. In 1950 the Department of Defense urged us to develop fruit powders, such as orange, lemonade, and tomato powder, for use by the armed services.

Actually, this development is not only of great value to the Department of Defense, but also to the civilian population. As a matter of fact, working with the Department of Defense has facilitated this whole development. For instance, in the case of this tomato powder, they have drawn up specifications to have a large commercial lot of commercial tomato powder produced in order to obtain information on the cost of production and to evaluate it on a large scale from the standpoint of flavor and acceptance.

Undoubtedly the company that produces this on a commercial scale will obtain firsthand experience on the process, will have an opportunity to evaluate it in large quantities, and might very well become interested in producing it commercially.

As a matter of fact, the company that is producing orange powder is the company that produced a large experimental commercial lot for the Department of Defense. They were so impressed that they have decided to go ahead and produce it commercially.

DEHYDROFROZEN FRUITS AND VEGETABLES

One other significant development in the fruit and vegetable field has been referred to on a number of occasions. It concerns dehydrofrozen fruits and vegetables. This is work that we undertook around 1946 or 1947.

Last year I mentioned that commercial production of dehydrofrozen pimentos had been undertaken and the product was being used by a large cheese manufacturer for making cheese spreads containing pimentos.

Within the past year there has been very extensive commercial evaluation of dehydrofrozen apples, dehydrofrozen apricots, and dehydrofrozen peas. We have developed a rotary dryer to produce dehydrofrozen products. This rotary dryer has actually been moved

into a plant processing peas where large quantities of raw material are available to carry out the dehydrofreezing.

This company, a large pea processor, produced a large enough quantity to carry on market evaluation of the dehydrofrozen peas. In the case of dehydrofrozen apples and apricots, the canning, and bakery industries are most interested from the use standpoint.

Dehydrofrozen products are more easily handled than frozen products. They are less bulky. This is a sample of the type of preserve that can be produced from dehydrofrozen products. It has exactly the same flavor as fresh apricot preserves but is much tastier than the product from dried apricots. Dried apricots are used for making some apricot preserves.

REMOVAL OF THRIPS FROM RASPBERRIES

Another problem in the fruit and vegetable field on which we have devoted considerable attention, is the development of a method for removing thrips from raspberries. In the Pacific Northwest the growers are confronted with a serious insect problem. The insects are called thrips. Tbey are rather tiny. The industry is concerned as to whether or not all the thrips have been removed effectively. They have to be removed effectively for the product to move into the consumer market.

We have developed an excellent method for removing thrips from raspberries. It involves the use of a detergent. The raspberries are placed in water and treated with the detergent. All the thrips rise to the surface and are easily removed.

During the past year a number of raspberry processors, not only the processors of the frozen raspberries but also the canning industry, have used this method.

PROCESS FOR PRODUCING POTATO FLAKES

There have been significant developments in the field of potatoes. During the past year we have developed a process for producing potato flakes. Potato flakes can be produced by a rather simple method, by using drum dryers.

Although potatoes have been dehydrated in the past using drum dryers, no one apparently recognized that at a spacing of 3 millimeters between the drums, a flake is formed which, when reconstituted with hot milk or water, tastes practically the same as freshly mashed potatoes. The Quartermaster Corps is very keenly interested in this product and of course potato processors are, also.

A rather interesting development over the past 10 years has been the tremendous quantities of potatoes that are now being processed either for the production of potato chips, frozen french fries, and potato granules. Potato flakes are a new form of processed potatoes. We feel that this has a great deal of promise and is extremely attractive to the consumer, because the consumer can use this type of product and produce mashed potatoes very quickly. The peeling and boiling of potatoes is time consuming.

Mr. HORAN. May I ask Dr. Hilbert or Dr. Shaw if this experiment took into consideration the storage studies on potatoes that were conducted 4 or 5 years ago.

It was found, after a rather extensive experimentation which I saw in operation, that the temperature in the handling—the temperature in the handling of potatoes after they were dug, had a great deal to do with the quality of the finished product, especially in chips and in French fries. To my knowledge, we do not yet have a good frozen French fry potato product on the market.

I wonder if you had coordinated this work.

Dr. SHAW. Dr. Hilbert will respond.

Mr. HORAN. The handling and storage temperatures can have an enormous effect on the finished product. Presumably that factor should be coordinated into this work.

Dr. HILBERT. That work has been coordinated, Mr. Horan. We have work underway to find out what the variation of the sugar content is at different storage periods of potatoes that are to be used for potato chips. There is no doubt that the concentration of sugar in the potato has a very marked effect upon the appearance and the flavor of the potato chip.

When the sugar content is too low, the potato chip has a very light color and is rather unattractive. If the sugar content is too high then the chip becomes dark brown. It looks almost like it has been burned. But in the intermediate range of sugar concentration, a potato chip produced has a golden brown color and optimum flavor.

That work has been underway for about 2 years. With respect to the effect of different sugar contents on frozen French fries, I am not sure if we have work underway on that.

I would like to have Dr. Matchett answer that question.

Dr. MATCHETT. With reference to frozen French fries, Mr. Horan, the same considerations apply as apply to the chips. That is, the storage conditions under which the potatoes are kept do govern the sugar content and consequently the quality of the French fries.

You are quite right also, that the sugar content would determine in large measure the quality of the flakes that Dr. Hilbert was just describing. The quality of the raw material as governed in part by the way it is handled is vital to a good product also.

Mr. HORAN. There is no question but what if you handle potatoes right, you can hardly miss on good French fries. But if they have been allowed to get colder than 40° or if something has happened between the field and the grocery store, the end product on the consumer's table is terrible and of course it has its effect on the producer. And it may not be his fault.

Dr. MATCHETT. There is no question about that. The quality of potatoes that reach the market certainly affects the amount that all of us use at home. One of the advantages of a product like the flakes or potato granules would be——

Mr. HORAN. To control that.

Dr. MATCHETT. Yes. Once the product is processed that problem is solved. However, the storage of the raw material is still a vital element, because in order to keep a plant operating over a long season, you would have to store raw material carefully.

Mr. HORAN. That is right. I assume whoever might manufacture that, if he wanted to stay in business, could take care of that.

Dr. MATCHETT. Yes, sir, he could take care of that.

COTTONSEED PRODUCTS

Dr. HILBERT. We have intensive research underway on cottonseeds, soybeans, and peanuts. The outstanding development in this field has been on the cottonseed. We have developed a new method of producing improved cottonseed meal having a very low gossypol content. Gossypol is a yellow pigment which is toxic to swine and poultry.

We have discovered the conditions required to reduce the gossypol content to less than a hundredth of 1 percent. The cottonseed producers are now actually producing cottonseed meal and guaranteeing that it contains less than one-hundredth of a percent of gossypol. They have been able to get a premium of about $15 a ton for this meal.

During the past year, about 200,000 tons of such meal were produced. That is equivalent to about 10 percent of all of the cottonseed meal that is being produced at the present time. This development is moving ahead extremely fast.

One other development that I might refer to in the field of oil seeds is that we have been able to develop a new product from cottonseed oil which looks just like paraffin, and behaves like paraffin. It is being evaluated for food uses and for making spreads in which the Army is interested, which do not melt at 100° F., and which can be used at freezing without becoming too hard. The Quartermaster Corps has developed specifications for having a large commercial lot of this spread prepared.

SUGARS AND SIRUPS

In the field of sugar and special plants, we have developed a process for making a citric acid from molasses, which is being commercially evaluated on a pilot-plant scale at the present time. This is a joint or cooperative effort.

Mr. HORAN. Is that cane molasses?

Dr. HILBERT. Yes; cane molasses.

We have developed a process for producing a high-flavor maple sirup. This was called to the attention of the committee a couple of years ago. Within the last year, one of the large maple producers has produced a high-flavored maple sirup. The bottle in this package will produce 8 pints of maple sirup by combining it with either cane sugar or beet sugar.

The producer has been kind enough to refer to the procedure we developed. That work was done at the Eastern Regional Research Laboratory.

DISPOSAL OF DAIRY WASTES

I would like to briefly dwell on the work that we have done on dairy products. About 4 years ago the Dairy Advisory Committee urged us to undertake work on developing a simple and cheap method for waste disposal, disposing of the waste milk that accumulates in the milk plants. We have developed such a process. It is actually in operation at the present time.

Two dairies in New Jersey were enjoined by the State to either close down or put in a waste disposal plant. They put up a waste disposal plant following our recommendations and the cost of each was about $10,000. Ordinarily, a waste disposal plant would cost about forty-five or fifty thousand dollars. They felt they just could not afford to construct such a costly plant.

There isn't any question but that the dairy industry in general will be using this method that we have developed. I think it removes from them the constant threat that has been facing them of closing down their central milk plants because of the waste disposal problem.

NONFAT MILK SOLIDS IN BREAD

During the last year or two, we have shown that bread that contains about 6 percent milk solids has better flavor and better loaf characteristics than bread which has only 3 percent milk solids.

At the present time the baking industry is using an average of about 3 percent of nonfat milk solids in bread. That is equivalent to about 250 million pounds of nonfat milk solids annually. If they used 6 percent, the quantity that they would use would be a half billion pounds of nonfat milk solids.

We are publicizing this work and working with the Food and Nutrition Board from the standpoint of having the nonfat milk solids content raised up to 6 percent.

Bread that does have that level of nonfat milk solids has a much higher nutritional value than ordinary bread. But it could very well lead to a marked expansion in the quantity of nonfat milk solids being used at the present time.

POWDERED WHOLE MILK

I referred to fruit powders. We are also investigating the production of a powder from whole milk. We have been able to produce a powder which reconstitutes very readily with water. It has the same flavor as fresh whole milk. But the product as we produced it up to the present time, has a curdled appearance. It is not as smooth as milk. In a blindfold test, however, one would believe it to be fresh milk.

We do not as yet have any information on storage of the product. That is important. This is an activity that we are really concentrating on and devoting a tremendous amount of attention to because we feel that this could be extremely helpful to the dairy industry.

As a matter of fact, it might revolutionize the industry.

At the present time too much of the milk is converted to butter and skim milk. The skim milk is used as a feed. Of course there is a very low return for it as a feed. In order for a farmer to get an adequate return for his milk he has to place a higher price on the butter. If we can increase the consumption of whole milk by converting it to a concentrate that is as palatable as milk, we will be making an extremely important contribution.

INCREASE FOR COTTON UTILIZATION RESEARCH

There is one increase proposed in the field of utilization research, and that is on cotton. It amounts to $150,000. The statement on the increase of $150,000 is on page 27. We have listed there four lines of work that we would undertake. One of them involves the effect of the temperature of drying and moisture conditions on the properties of cotton fiber. Another concerns the development of improved equipment to produce more uniform cotton picker laps. The third one consists of the development of new and improved cotton products by chemical change of the cotton fiber—that is, making new synthetic fibers from them. And the courth concerns the investigation of methods for increasing the smoothness of cotton yarns and fabrics. Each of these four lines of work have received a high priority rating by the Cotton Advisory Committee to the Department. Each one of these activities would be a line project, a new line of work. We have no work underway on each of the problems to which I have referred.

EFFECT OF HEAT ON COTTON UNDER VARYING MOISTURE CONDITIONS

Cotton during processing to fabric is subjected to rather high heat conditions under high moisture conditions. Approximately 75 percent of all of the cotton processed at the present time is subjected to high heat and moisture conditions. Fragmentary evidence indicates that if cotton is subjected to extreme conditions of heat and moisture they unfavorably affect the properties of the fiber. The textile industry is continually asking us this question: "What is the effect of temperature under high moisture conditions on the properties of cotton?" We know that when the conditions are extreme that the effect is unfavorable, but we have not been able to give them the detailed information they need to have. The Cotton Advisory Committee has urged that we undertake a systematic study of the effect of the heat under varying moisture conditions on the strength, elasticity, elongation, luster, processing characteristics, and dyeing characteristics, of cotton fibers. This is what we would propose to do under this increase.

Mr. MARSHALL. Is any of that work being done now in the Bureau of Standards?

Dr. SCOTT. I do not think so.

Dr. HILBERT. They have a textile products group but they are concerned with standards, that is, the standards of textile fabrics.

Dr. SCOTT. We exchange reports of work with the Textile Section of the Bureau of Standards. They have not indicated they are working on it.

Mr. MARSHALL. Because of some of the defense requirements that are facing the country, I believe they have also been doing a considerable amount of work in trying to arrive at the tensile strength and so on of some of these items. This committee would hardly be justified in encouraging duplicate work along that line.

Dr. HILBERT. Dr. Scott is in close contact with them.

Dr. SCOTT. They have been concerned with the tensile strength of fabrics but they have not taken up the aspect of heat as applied to cotton fiber processing.

Mr. MARSHALL. You mean they are not paying attention to the temperature as it affects it?

Dr. SCOTT. Not that I know of.

Mr. MARSHALL. Proceed.

UNIFORMITY OF COTTON YARN AND FABRIC

Dr. HILBERT. The second problem concerns improving the uniformity of cotton yarn and cotton fabric. It is much easier to get uniform fabrics from synthetic fibers than from cotton fibers. The uniformity of cotton fiber is affected in a number of different operations in the mill. I have referred to the card earlier. The card affects the uniformity of the yarn. Also, a subsequent operation, drafting, affects the uniformity of the yarn. And still one other is the picker lap which is produced in the textile equipment which precedes the card.

Picker lap looks much like a roll of absorbent cotton. The uniformity of picker lap varies by as much as 10 percent. In all subsequent operations this nonuniformity is accentuated. Although it may be only 10 percent in the picker lap, by the time it is processed to yarn there is a variation of from 50 to 150 percent in a mean average diameter of the yarn.

The Cotton Advisory Committee has urged us to make a thorough analysis of the picker from the standpoint of improving the uniformity of the picker lap. That is what we would undertake under this line of work.

NEW SYNTHETIC FIBERS FROM COTTON

The third line of work concerns the development of new synthetic fibers from cotton. We have had work underway on developing synthetic fibers and it has been successful. One type of synthetic fiber that we have produced is acetylated cotton. Another that has a great deal of promise and on which pilot plant work is underway is cyanoethylated cotton. Under this increase we would propose to make still new types of synthetic fibers which would be strikingly different than any of the other types of fibers we have produced up to the present time. We would replace most of the oxygen atoms that are in cellulose and replace them with other chemicals which would yield fibers that are more like nylon and dacron. In other words, for certain specialized uses new types of synthetic cotton fibers would aid cotton in meeting the competition of synthetic fibers.

INCREASING SMOOTHNESS OF COTTON YARNS AND FABRICS

The fourth line of work concerns increasing the smoothness of cotton yarns and fabrics. For many special purposes it is desirable to have smooth fabrics. For example, in the lining of a coat the fabric used is very smooth. In overcoats, and women's bandeaus, brassieres, and slips, it is desirable to have very smooth fabrics.

Synthetic fibers in general are smooth because of their uniformity. Cotton fibers are not smooth and have a dull appearance, because the ends of the cotton fiber protrude slightly in the cotton thread which tends to give a clinging effect.

In this line of work we would propose to coat the cotton fiber with chemical finishes to smooth out the ends that stick out and also cut down on the lint. Formerly the whole market of smooth fabrics was held by cotton and by silk. Synthetic fibers have taken it over almost completely. On this work we would initiate a project from the standpoint of smoothing out cotton fiber.

Mr. NATCHER. After listening to the fine statement made by Dr. Hilbert concerning utilization of research I am more definitely convinced than ever that we shouldn't become hysterical when we think of the surplus commodities that we have on hand. I never have believed that we should penalize the American farmer just because we have too much instead of too little. We all know that most of our surplus commodities were brought about as a result of the Korean conflict and built up during the years 1952 and 1953.

I am indeed glad to hear, Dr. Hilbert, of the close cooperation that you have between your division of the Department and private industry.

Mr. Chairman, I definitely am of the opinion that money expended for this type of research, utilization research, is money well spent, especially where you have achievements such as we have in this instance.

I think, Dr. Hilbert, you and your associates have done fine work. I certainly enjoyed your statement.

Dr. HILBERT. Thank you very much.

CITRUS UTILIZATION RESEARCH

Mr. HORAN. Last week there was a convention, or maybe it was the week before, of your citrus utilization laboratory men at Riverside, Calif. Do you have charge of overseeing that work?

Dr. HILBERT. Yes. The Winter Haven Laboratory, which is engaged in utilization research on citrus, is under my jurisdiction.

Mr. HORAN. And there is a laboratory in Texas and one in California.

Dr. HILBERT. There is one in Texas and also one in Pasadena, Calif., working on citrus fruits.

Mr. HORAN. They had the meeting in Pasadena.

Dr. HILBERT. Periodically we meet in the fall with the representatives of the citrus industry. We invite representatives from all the companies. We bring in our representatives from the Pasadena station and from the Weslaco station. We have either a 1- or 2-day program in which we give industry complete information on all the developments of the year. Every year we also have a meeting in Pasadena, and that is the one that you are probably referring to. At that meeting the head of our laboratory from Winter Haven and the head of the laboratory from Weslaco describe the work that is being done at these two stations.

The citrus industry in California takes full advantage of what we are doing in the three different stations.

Mr. MARSHALL. Dr. Hilbert, we have enjoyed a fine explanation of your work this afternoon. We appreciate it.

MONDAY, FEBRUARY 14, 1955.

Mr. MARSHALL. The committee will come to order. Dr. Stiebeling, we are pleased to have you before this committee. You have a prepared statement, do you not?

HUMAN NUTRITION AND HOME ECONOMICS RESEARCH

Dr. STIEBELING. I would be glad to make a few remarks for the benefit of the new members of the committee. The research in human nutrition and home economics is organized in two branches for program development and supervision. The Human Nutrition Research Branch and the Home Economics Research Branch. The funds available this year for our work are $1,426,000. This is $73,000 more than last year.

We have used the increase available in accordance with our presentation last year, for initiating studies on the composition and nutritive value of food relating to the mineral content of modern foods, and also for strengthening the research on the distribution of the occurrence of some of the more recently recognized vitamins in foods, specifically, vitamin B–12.

The notes on pages 76 to 78 give a few examples of the current progress of our work. I would be glad to discuss those or other parts of our program more in detail, if you like. I do, however, want to discuss with you a proposal for some shift in the program under our current funds. As you know, the budget for 1956 does not include an increase for research in this field.

Mr. MARSHALL. Will you give us a brief summary of some of the items.

COOKING QUALITY OF POTATOES

Dr. STIEBELING. During the fiscal year 1954 there have been issued some 125 publications from the various subject matter areas in which we work. The particular ones that have been selected as examples of current progress are first a study of cooking quality of potatoes, which has been undertaken cooperatively with the former Bureau of Plant Industry and some of the research workers who are now in the Biological Sciences Section of the Agricultural Marketing Service.

These studies were initiated at the request of the American Restaurant Association and other groups on the Potato Research Advisory Committee to the Department, to see what could be done to help characterize potatoes as they appear on the market for their usefulness for different kinds of institutional or household food preparation. One of the major objectives of the study was to determine to what extent potatoes can be classified as to their cooking quality on the basis of variety of potato, the section of the country where grown, and the storage conditions under which kept.

A second objective was to develop, if possible, tests that could be applied to the raw tubers so that when they were purchased for a particular purpose, the consumer could be assured of a potato that would yield satisfactory results for his purpose.

During the course of our work we at first made a pilot study on the basis of the 1947 crop of potatoes, and then in 1948 and 1949 studied six varieties of potatoes from important commercial-producing sec-

tions, grown in several places, to see whether variety and place of origin might be sufficient identification for the quality of potatoes.

We have studied potatoes from these various places and stored under two conditions of temperature, at harvest time and after different periods of storage. The conclusion from this study was that, while there are significant differences among varieties, the differences within a variety due to both the place where they are grown and the cultural conditions of the year, are such that you cannot depend very satisfactorily on variety and the place of origin to characterize potatoes for a specific purpose.

Our studies confirmed earlier work that the specific gravity of the potato is probably as good a practical test as any as to whether it will cook up mealy, which is the kind of thing that you want if you are having baked potatoes or mashed potatoes—or cook up waxy, if you are interested in potatoes for potato salad, and some other uses. That is particularly important for institutional use of potatoes, so as to get the kind of quality that is wanted.

We also found that just as good as specific gravity as a test is the total solids of the potato. That, of course, will depend upon the maturity of the potato and its variety and place of origin. We also found that the alcohol-insoluble fraction of solids was another possible indicator. For practical purposes, so far, the specific gravity test, which could be applied when the potatoes are washed for market, so that they are graded for specific gravity at the same time they are graded for size, would help both the institutional and the household buyer to get potatoes that would be best for the purpose for which the user intends them.

Mr. MARSHALL. You have not found any way at the moment that you, through a cooking process, can improve the quality of the potato?

Dr. STIEBELING. We are doing some work on that point just now. For example, in connection with baked potatoes we have work under contract with the Research Foundation of the Colorado Experiment Station to see whether baking at different temperatures will help to overcome the lack of mealiness in some kinds of potatoes. We also have a contract with the Pennsylvania State University in which we are trying to see whether through pressure cooking, thus raising the internal temperature of the potato during cooking, the same objective can be accomplished. The work is not far enough along to give results as yet.

COMMODITY FACTS FOR CONSUMER EDUCATION PROGRAMS

Another part of our research that I would like especially to mention is a series of bulletins that are being prepared called, Commodity Facts for Consumer Education.

One part of the Research and Marketing Act, you will recall, under title II, provided for increased activity on the part of the Extension Service and marketing groups on consumer education to promote the use of agricultural products.

One of the problems that seemed to be encountered from the beginning of this work is that the background facts for these educational programs are so widely scattered that a person who is putting on an active program over the radio, television, or is writing daily or weekly newspaper stories, finds it a very great burden to bring together the pertinent information on which to base the educational program.

In order to help see that the educational programs carried on in different parts of the country are consistent and are based on the best information available from research in the Department, we have been systematically bringing together the facts on the nutritive value of the product in the case of foods—all so far have been on food—their place in the diet, the seasons when prices tend to be at their lowest, and supplies tend to be at their highest, information on grades and information on preparation, and so on.

Mr. MARSHALL. We are interested in the matter of bulletin preparation. What success have you had with the State groups using your bulletins as printed? Do they rewrite your bulletins occasionally?

USE OF DEPARTMENT BULLETINS BY STATES

Dr. STIEBELING. We find that some States, at least a dozen States, have adequate staff both at the experiment station and Extension Service to prepare bulletins that are specifically adapted to their State situations. They use the material which we prepare, as well as the source material to which we go, to help make those bulletins as effective as possible. However, there are a good many States that do not have the local personnel to do that job. In that case they use our bulletins as they are, or they may reprint them under their own signature and use them in that form.

Mr. MARSHALL. Can't you print bulletins that can be used in all States?

Dr. STIEBELING. I think in general the Home Economics bulletins are more successful and are more widely used in all the States than are other types of agricultural bulletins. In a study that the Extension Service recently made of the extent to which the Department of Agriculture popular bulletins do serve the needs of State programs, a very high proportion of the ones that were specifically mentioned as satisfactory were bulletins that came from our research. Many States, while not specifying particular bulletins as being well adapted and in general use, did point out that Home Economics bulletins were more generally useful throughout the country than the many other kinds that the Department publishes.

Mr. MARSHALL. I am not criticizing the bulletins that you have put out, or the worthwhileness of them. My question was directed more to a matter of duplication of work and effort. I am wondering, as a moneysaving proposition, if your bulletins might not be printed in such a way that they would not be duplicated by these different States. That troubles me. There are so many things that we want to see done in an agricultural way that I dislike seeing any funds wasted in duplication of effort.

Dr. STIEBELING. It seems to us where there are bulletins on specific subjects, that it is uneconomical for each of the 48 States to do their own. I know of only two instances in which States have said that our material was not applicable. In the one instance, apparently, it was in connection with a clothing publication. The procedures which were recommended in our bulletin were not the ones that the clothing specialists liked to use in their teaching. It was an individual matter, I think, because so many States say that they like and use that particular bulletin.

In another instance, in the case of home canning, California—where there has been some problem with botulism—has felt that the

temperatures and time of processing of some products, which we found to be adequate in our laboratories, perhaps should be somewhat longer. So, for a few of the nonacid vegetables they had been unwilling to use our recommendations and had increased the length of time.

In establishing the home-canning procedures, we have used the same basic methods that the National Canners Association uses in determining the adequacy of canning procedures for commercial use. So far as we are aware, in the 10 years during which our research-based recommendations on home canning of nonacid vegetables and meats have been used, there has never been any report of any difficulty, either from spoilage or anything else. The National Canners Association has worked closely with us because they realize that if there is trouble with home canning, it reflects on commercial canning, and they have felt that our work is sound and they are satisfied with it.

NEW BULLETINS FOR CONSUMER EDUCATION

In the case of these compilations of facts for consumer education programs, I should mention the publication on milk and the one on beef. They came at very opportune times as far as the Department's programs for helping to move surpluses were concerned. They were very widely used in both of those programs and continue to be used on a long-term basis. We have issued bulletins on beef, pork, milk, and two fruits. One on bread is now in the final stages of preparation, the next one we expect to have will be on potatoes.

We have felt that 1 person or 1 agency bringing together all of this information does serve exactly the purpose you suggested, Mr. Chairman, of making it unnecessary for this kind of work to be duplicated over and over again. It does mean that what is said by the Department and the Extension Service can then be said as with one voice. Our bulletins have sufficient review by all Department agencies who are concerned. So they do reflect all of the research that the Department has or that the experiment stations and other research agencies have that is applicable to the point.

HOME-BUILT WALK-IN REFRIGERATORS

Another item of current progress is the development of designs, specifications, and construction drawings for home-built two-temperature walk-in refrigerators.

With the increased emphasis on doing more of the preparation of food for marketing on the farm, it has been helpful in many intances for the farmer to have on his own place a large enough chill room or freezer space to prepare products for the market and then to hold them until the time is right for sale.

We found, the agricultural engineers and our home-economics group working together, in a survey made a number of years ago of the extent of use of such facilities throughout the country that one of the problems that seemed to handicap the fullest use of such facilities was that arrangements within the freezer unit or chill room were not well adapted for convenience and for temperature control.

On the basis of what we learned about the nature of the problem the agricultural engineers and our group designed a two-temperature, walk-in refrigerator which we tested out in the laboratory through

engineering tests and through practical use, and then later tested in the field.

Those designs are available now for farmers to build. The construction features are such that almost all of the construction can be made by one person and put together in a simplified fashion with a minimum expenditure of effort and cost. There are several in nearby Maryland which we have field tested in cooperation with the University of Maryland. We find great enthusiasm for the facilities and for the efficiency with which these operate. They are used both for the family's food and for food for sale. The construction drawings and the instructions for putting together, are available to any farm family through the Extension Regional Plan Service.

SERVICEABILITY OF COTTON SHEETINGS

Another item of current progress is a study which we have made comparing the serviceability of sheetings made from cotton of known origin and construction with those of cotton-rayon blends and rayon. This study was undertaken a number of years ago when sheetings from synthetic fibers were beginning to appear on the market. The question was coming from homemakers as to the suitability of blends for sheetings. A study was undertaken in cooperation with the former Bureau of Plant Industry in selecting the kind of cottons for study, and with the University of Tennessee and Kansas State College in study of their properties in the laboratory and as shown in serviceability under conditions of actual use.

In the first 5 launderings of the sheets, which were originally 104 inches long, the rayon-cotton blends shrank 12 inches. The all-rayon sheets shrank 19 inches as compared with 8 inches for the cotton sheets. The weakening from successive launderings and wear periods was the same for the fabric types, but weakening from laundering was greater for rayon than for cotton.

There has come renewed interest in such findings. Recently inquiries have come for information on this subject because the British, we understand, are beginning to consider putting on the market sheets of cotton blended with other fibers. Of course, sheetings are one of the outstanding outlets of cotton in household furnishings. It had seemed to us important that agriculture should know, as well as that the consumer should know, what are the relative merits of the two fabrics.

Mr. MARSHALL. Is your laboratory efficient enough that you can make a test of these fabrics?

Dr. STIEBELING. We have in our laboratory a very good collection of many kinds of instruments that have been developed by the industry and by the Bureau of Standards, and some developed by ourselves, to study the physical properties of fabrics, that is, the breaking strength, shrinkage, fluidity, which is a measurement of the deterioration in the case of cotton, and so on. We have excellent facilities for that sort of work.

We cooperate with the various State colleges and institutions for putting certain experimental fabrics into actual use under normal conditions of use, and supply and with very close supervision so that the various fabrics under test are given completely unbiased appraisal.

COOPERATION WITH BUREAU OF STANDARDS

Mr. MARSHALL. Do you coordinate any of your work with the Bureau of Standards?

Dr. STIEBELING. The Bureau of Standards does not make this kind of study on many kinds of consumer goods. We are in touch with the Bureau of Standards in connection with the development of equipment. There have been instances in which we have cooperated with the Bureau of Standards in testing suitability of household goods. During the war, you may remember, with the rubber shortage, the amount of rubber that was allocated to the making of jar rings was very limited. There was an attempt to use synthetic rubbers or reclaimed rubbers or other kinds of composition for this use. In studying the suitability of some of these wartime products we worked cooperatively with the Bureau of Standards; they did part of the work there, because of the special facilities they had in their Rubber Division. In all of our projects we keep in close touch not only with the other agencies of the Department of Agriculture, but also other agencies of Government and State research institutions to make full use of the best facilities there are for whatever the research project calls for, and to coordinate or to cooperate in every way that we can.

FAMILY FINANCIAL SECURITY DATA

I might mention also some materials that have been published in the Journal of Home Economics on background material for helping farm families plan for financial security.

This information was requested particularly by the Extension Service in connection with the Annual Farm and Home Outlook Conference. The new program which the Congress authorized last year for farm-home development is making demands for many kinds of help from our research staff, for background information to help backstop the home management specialist working with the farm management specialists to develop the farm-home unit. This particular item mentioned was a small piece of work, but it is illustrative of one area of research which we undertake.

FAMILY FOOD CONSUMPTION STUDIES

A sixth item is the final report of a study which was made some years ago on food consumption of city families. This study was one of the statistical economic studies which we undertake to show the food combinations and the quantities of foods that people consume in different income classes, in different parts of the country, families of different age groups and sizes. In order to understand the demand for food in this country, and to gear educational programs for improved food selections, we need to know what people are eating at particular times and to study, insofar as possible, what the factors are that determine the differences among different segments of the population in their food choices. We early released the descriptive material that came from these studies that were made between 1948 and 1951 in a series of 29 publications in order to get out to the users of such material as promptly as possible the information on the quantities consumed, the prices paid, the nutritive value of the diets, and so on.

After that descriptive material was released, we used staff time to study more analytically the information that is available, to help explain why there are these differences, who are the low-consuming groups, where they are, where educational programs or other programs should be directed for improving food consumption from the standpoint of both nutritive value and demand for agricultural products.

The final report, which is in press now, includes descriptive material that is of long-term value as a benchmark against which to measure changes, changes that will come about through economic change, through definite programs for increasing consumption, whether they are distribution programs or educational programs, and which show the variations in trends in consumption among families. The results help us to anticipate more accurately than we would be able to do otherwise, what the demand for different kinds of foods is likely to be, both in terms of markets, but more importantly, from the standpoint of home economists, as a result of emphasis in education, to improve diets throughout the country.

That covers the specific items we have mentioned in our notes on selected examples of recent activity. There are, of course, many more items that could be mentioned not only in human nutrition but on other phases of home economics—textiles, household equipment, and economic problems.

RECENT PUBLICATIONS

The list of publications in fiscal year 1954 amounts to about 125, most of which were published through scientific journals or in cooperation with States. About 22 of the items that were published through the Government Printing Office are of particular value to the families and to the general public. They are publications dealing with home food preparation, home food preservation, household buying, and so on.

Mr. MARSHALL. Mr. Natcher, any questions?

Mr. NATCHER. I have no questions. I would like to thank you, Dr. Stiebeling, for your fine statement. I would like to say, Mr. Chairman, that this particular division of the Agricultural Research Service has meant a lot to my home State of Kentucky. I want to thank you again. That is all, Mr. Chairman.

CONSUMPTION OF MILK AND MILK PRODUCTS

Mr. VURSELL. I wonder if, in your studies and your publications having to do with nutritious foods, you have been able to convince the low-income groups and people generally that the greater use of milk and milk products would give them greater nutrition? Do you think any of the publications that you have been able to put out have been able to stimulate that?

Dr. STIEBELING. We have about ready to go to press now a new bulletin on milk called Why Drink Milk?—I am not sure what the final title will be—which is for the specific purpose you mention.

I think the work in human nutrition and home economics has done a great deal to stimulate consumption of milk. One of the interesting things that has come out in our study of food consumption, to which I referred earlier, is that between 1942 and 1948, the two latest periods for which we have had national studies of urban food consumption that

can be analyzed by income, the results show that at every income level—the lower third, the middle third, the upper third—there has been a very marked increase in the consumption of milk and milk products. In fact, there has been about a 20 percent increase among city families in the lower economic third, and in the upper economic third as well.

IMPROVEMENT IN GENERAL QUALITY OF DIETS

For other food groups, the increase among the lower economic third has been particularly marked in the case of meat and related products, in certain of the leafy vegetables, and in the citrus fruits and tomatoes which are important for vitamin C, showing the influence of educational programs during this wartime period.

There has been a remarkable improvement in the general quality of diets of people in this country, particularly over the last 20 years. But it was very marked during the wartime period when incomes of the lower income group were raised proportionately more than those of the upper income groups and expenditures for some kinds of consumer goods were limited because of the limited supplies in the market. So that people in the lower income third got in the habit of eating a better diet than had been true prior to World War II.

How well food consumption has held up throughout the period since the war we have no figures to indicate, but a study is underway, or will get underway in about a month, which will give us figures comparable to those of 1948 and 1942 and show the consumption of different kinds of foods among different income groups, not only among urban families but also among village and rural families. Those studies, I think, will be very helpful in showing where to direct further educational programs for the improvement of diets, nutritionally and esthetically also.

Mr. VURSELL. That is all, Mr. Chairman.

Mr. MARSHALL. You have been making a little change of emphasis in your work. You have been shifting emphasis from one phase of your work to another, have you not, Dr. Stiebeling?

REDIRECTION OF RESEARCH IN HUMAN NUTRITION

Dr. STIEBELING. We are proposing to strengthen the work in human nutrition. We have shifted from the Home Economics Research Branch to the Human Nutrition Research Branch the economic phases of our food and nutrition work and our work on food in relation to household management. We propose to make some additional shifts from the home economics program to further strengthen the work in human nutrition. Those shifts which we propose are indicated in a table which I will hand you.

Mr. MARSHALL. If there is no objection, we will place the chart in the record at this point.

(The chart referred to follows:)

Proposed redirection of research in human nutrition and home economics

	July 1, 1954 program	Transfers reflected in 1956 budget	1956 budget estimates	Additional program shifts proposed	Program as of end of fiscal year 1956
HUMAN NUTRITION RESEARCH					
Food quality and use	$173,000		$173,000	+$27,000	$200,000
Nutrients in food (food analysis)	262,000		262,000	+48,000	310,000
Human requirements	167,000		167,000	+33,000	200,000
Utility of foods for nutrition	602,000		602,000	+108,000	710,000
Diet appraisal	240,000		240,000		240,000
Household food consumption		+$117,000	117,000	+38,000	155,000
Food in relation to household management		+125,000	125,000		125,000
Food management	240,000	+242,000	482,000	+38,000	520,000
Total, Human Nutrition Research	842,000	+242,000	1,084,000	+146,000	1,230,000
HOME ECONOMICS RESEARCH					
Household food consumption	117,000	−117,000			
Family budgets and expenditures	125,000	−125,000			
Economic studies	242,000	−242,000			
Household buying, use, and care	88,000		88,000	−88,000	
Fabric quality	115,000		115,000		115,000
Textiles and clothing	203,000		203,000	−88,000	115,000
Household equipment	58,000		58,000	−58,000	
Housing	81,000		81,000		81,000
Housing and household equipment	139,000		139,000	−58,000	81,000
Total, Home Economics Research	584,000	−242,000	342,000	−146,000	196,000
Total, Human Nutrition and Home Economics Research	1,426,000		1,426,000		1,426,000

Dr. STIEBELING. The first column shows the program as of July 1, 1954. The second column shows the shift of the studies on household food consumption and family budgets and expenditures from the Home Economics Research Branch to the Human Nutrition Research Branch.

There is no change in the nature of the work under the section called "Household food consumption."

Under "Family budgets and expenditures," we propose to concentrate on food in relation to other aspects of household management. That means that the specific studies which we had formerly done under "Family budgets and expenditures" relating to clothing would be discontinued. So there will be opportunity for more emphasis on food in relation to household management.

The shift from "Family budgets and expenditures" to "Food in relation to household management" means that we shall be unable to carry on the kind of study which we have been making on factors affecting consumption of textiles and clothing but shall concentrate rather on studies of household production and consumption of food in relation to other aspects of household management.

In connection with the proposed shifts which are shown in the next to the last column we are proposing to eliminate the work on household equipment and on household buying, use and care of clothing—not that we think that those things are not important, but we think that they are of lesser importance in our program than the work remaining

in the related areas, and of lesser importance than research in food and nutrition. We feel that it would be advantageous to consolidate our work somewhat more, to have stronger programs in those areas in which we are operating.

Mr. MARSHALL. Dr. Shaw, would you like to make some comment about these shifts?

Dr. SHAW. Yes. The work that is being proposed for discontinuance in the clothing and textile fields, is largely in the selection, care and use of clothing. We have felt that the essential information available to households in this field is much more adequate from general commercial sources than is the information in the food and nutrition field. We have felt that with the State programs the way they are as of today, compared to what they used to be previously, we can well afford to discontinue these efforts. It will take about a year to complete all projects in a way that we will not have losses. We will bring each project to a logical conclusion.

Mr. MARSHALL. You do not propose losing the effect of any of the work?

Dr. SHAW. No; we want to take the fiscal year 1956 to close them out as they come to natural closing points. We want to use the released resources on important areas of food and nutrition, where we think the Nation will get greater benefit from the money expended. We have also taken into account the availability of the information from sources other than ourselves, commercial sources, and also the State experiment stations.

We think that concentrating more of our attention on the food and nutrition field will give us a better research program than we currently have.

Mr. MARSHALL. You will continue to coordinate the work that the State experiment stations are doing?

Dr. SHAW. We will have the same processes in operation through the experiment stations' office as we now have for reviewing all the work; yes.

Mr. MARSHALL. Dr. Stiebeling, we appreciate your coming before this committee. We always do. Do you have anything more you wish to add?

Dr. STIEBELING. I think we have covered the essential points, sir.

THURSDAY, FEBRUARY 10, 1955.

Mr. WHITTEN. The committee will come to order. I presume yo will present this, Dr. Clarkson, on plant and animal diseases and pe control. We will be glad to have your general statement.

Dr. CLARKSON. First, I would like to introduce to the committ Dr. C. D. Van Houweling. He is the Director of the Livesto Regulatory Programs in the Research Service since we last met wi the committee. Dr. Van Houweling is a graduate of Iowa State as veterinarian. He was with the Veterinary Corps during World W II. He has held positions with the American Veterinary Medic Association in their general office as assistant executive secretar positions with the Illinois Agricultural Association, and he came to from the University of Illinois.

Mr. WHITTEN. I would like to take a moment to say that we a glad to have Dr. Van Houweling with us here. We will look forwa to a real contribution to the Service, in view of his background an experience.

EMPLOYMENT OF VETERINARIANS

Dr. CLARKSON. Thank you, Mr. Chairman. The employme opportunities that we can offer to veterinarians still lag considerab behind the opportunities that they have elsewhere in private practi or in other employment with States, counties and the like.

In our work this year as you know, we have expanded the bruc losis program. That is possible only through the part-time emplo ment of practicing veterinarians in the counties where they are locate

We have not made an effort to build up large Federal employme to get that job done, but are relying upon the practicing veterinarian in their areas. When the job is over we will not have a large grou of people to disband. Just to keep up with normal replacement we are having difficulty obtaining veterinarians.

Government entrance salaries present some difficulties. We hav been able, with the aid of the Civil Service Commission, to make som adjustments in the entrance salaries of veterinarians that we thin will help us some.

The number of graduates coming from veterinary schools now about 40 percent greater than 10 years ago. This supply of traine personnel should bring about a balance in this employment situati before long.

As to other scientific personnel, our position is much better. understand that Dr. Shaw has given you the information on th employment situation generally.

PLANT AND ANIMAL DISEASE AND PEST CONTROL

The plant and animal disease and pest control programs of th Department protect the farmers, the growers, the transportatio people, the users of farm crops and livestock from the ravages diseases, insects, and other pest damage. We operate in accordan with specific legislation. Programs of import control, export contro

eat inspection, the licensing of economic poisons, and virus-serum ntrol in interstate and foreign commerce are strictly responsibilities the Federal Government. However, the bulk of our work is in operation with the States in recognition of the joint Federal-State sponsibility and interest in these programs.

CIVIL DEFENSE EMERGENCY RESPONSIBILITIES

We have during this year had some additional responsibility dele-ated to us from the Federal Civil Defense Administration. They ave asked the Department of Agriculture in a document approved y the President, to take over responsibility for the planning, and he implementation whenever that is necessary, of protection of crops nd livestock against the possibility of enemy attack, either by sabo-ge or direct attack, in the form of biological or chemical warfare.

This work has been delegated to the Agricultural Research Service ecause the activities that are involved are so closely intertwined with ur normal responsibility of protecting crops and livestock. For xample, the possibilities of biological warfare involve many of the iseases and pests against which we are already conducting protective rograms.

In carrying out the additional responsibility we are using regular nds, as there are no special funds for it. We require our people ho are assigned to these protective programs to give attention to he planning for any enemy attack that might be involved.

We have set up in the Office of the Administrator a special assistant r emergency programs. He is giving his attention to the coordina-on of this work. We have set up an Emergency Programs Board ith myself as Chairman, and with the directors of research and egulatory programs of our entire service serving as members of the oard. In that way we have the people who are directly responsible r the normal activities in a position to see to the planning for these mergency activities that may be thrust upon us.

Mr. WHITTEN. How much of the money is being spent in that? re you reimbursed for anything on this? Does it detract from your egular work?

Dr. CLARKSON. There is no reimbursement from any source. The nly expenditure that has been made directly is the employment of is special assistant, and for his office and his travel. That comes artly from each of these regulatory program funds. He carries out is emergency responsibilities within the framework of the normal rograms.

PROBLEMS OF FINANCING CIVIL DEFENSE

Mr. WHITTEN. It is ideal to be prepared for every possibility. was on Civil Defense Appropriations some years ago and they anted money to buy up a whole lot of material, and wanted store-ouses over the United States with civil service employees there. hey wanted fire-fighting stations all over the United States.

If you analyze it, while we had need for these things, we would ave to stockpile them at the cost of using them.

Yet in the ordinary operations of the business of the country, you had those things in the hands of the contractors and those that did the work. I was able to get them to compile a catalog where these things could be found, so in time of trouble, one city could have at its fingertips what was available elsewhere.

The law gave the Government the right to confiscate that kind of thing in time of need and pay later. Nothing in the world would make less sense than to have trucks and millions of dollars worth of equipment, stored all over the country, sitting there month after month and not used. Nothing is worse than to have to depend on a fire truck or fire-fighting equipment that has been setting there a year, and when you need it, the tires are apt to be down.

With all due deference to the military—they want to be guarded against everything. I have seen nothing to indicate that the stockpiling of weapons of war is sufficient for anybody to scatter them throughout the country.

It is still high enough in cost and hard enough to take to the point of need that we will still have to look to military points.

On this thing that we find the Department of Agriculture has been saddled with, just handed over to it, so to speak, without going into the percentages, I am not at all pleased. I seriously question whether this kind of project should be placed on you without clearance by the people dealing with appropriations in Congress, so that you can see what the need is. In the final analysis, we will have to determine where to spend the effort that the Nation can afford to spend. There just is not enough money and men, or anything else, to be 100 percent protected against all eventualities.

Dr. CLARKSON. I think you will find, Mr. Chairman, that we are handling this in accord with your ideas. In each of the States, in regard to animal diseases that might come in either by accidental introduction or by some introduction associated with sabotage, this problem of having supplies, materials and things in readiness has been dealt with in exactly the way you describe, in that each of our field stations is required to keep a listing up to date of the places where those things can be secured in time of emergency. For example, they have dealt with the road commissions, the soil conservation districts, the Forest Service, the county boards and with State authorities of all kinds, so that they have the locations of all necessary supplies and equipment cataloged. The people who have control of the items have been informed of the possibility of need so that they will not be caught off guard if they are asked for them. They know where to buy these things if they can not be obtained otherwise, all the way down to protective clothing.

Mr. WHITTEN. What I am saying is only one man's opinion. But this view should be expressed along with the rest. There was a period where the civil defense group wanted an untold amount of money to provide shelters, dig holes in the ground, so to speak. If we are ever subjected to a bombing, it would be nice for everybody to have a storm cellar deep enough for protection. The problem prior to that time is whether, in the use of what money, effort and energy you have,

it is sound to try to spend your energies in building shelters all over, which must be done by the reduction of certain other efforts in connection with it.

I have always expressed the view that we need to give attention at least to these things. Storm shelters are good in time of need but prior to further developments along that line the chances are that they will put in weapons and things of that sort as being a little sounder.

Dr. CLARKSON. We are building a plan within the limits of our own organization and the State organizations with whom we cooperate.

Mr. WHITTEN. I hope whatever you do will fit into work you are already doing. While we are doing this at their instance and while it may have some benefit, it will have more if it contributes to discharging your primary responsibility in your department.

Please continue, Dr. Clarkson.

CLOSE RELATIONSHIP OF RESEARCH AND REGULATORY PROGRAMS

Dr. CLARKSON. There is, of course, a very close association between these regulatory projects and the research and extension activities of the Department, but more particularly with the research.

The projects depend literally upon the day-to-day results of research, and the research people depend upon the information that is developed in the regulatory projects, which are in many respects pilot plant applications of the research findings. In some cases they are the only places where the research findings can be applied, such as in our foot-and-mouth disease project, or in the golden nematode work.

We have set up between our regulatory and research branches a very close liaison of the individual workers. It is not the responsibility alone of the Administrator, his assistants, and the directors of these programs to provide close coordination. It is first the responsibility of the individual worker. The one who has the responsibility, for example, of carrying out the Japanese beetle control program is directly responsible for seeing to it that he has available the latest results of research and that the research people have the latest developments that have occurred in the control program, so that there will be no lack of attention to the problems as they emerge.

FEDERAL INTEREST IN DISEASE AND PEST CONTROL

As the committee knows, in this broad field of protecting American agriculture from diseases and pests, the farmer, the livestock grower, and industry in its many aspects, carry by far the heaviest burden. A myriad of diseases and pests that call for the farmer's daily attention are taken care of by him and must be handled by him alone. There are a good many that require the attention of the States, or the counties, or some other organized governmental body, or perhaps some organized group of farmers and growers to deal with the problem, because it is of such nature that the individual farmer either cannot

handle it alone or, if he does, his own property may become reinfested from the neighbor's property which has not been properly cared for.

There are only a few of the general problems in which the Federal Government has engaged in control programs. Each one of those involves complications with interstate or foreign commerce. In each of those programs the grower interest, the general industry interest, and the State interest are retained. The Federal interest varies from program to program, depending upon the circumstances. For example, has the disease covered a small or a large part of its potential range in the United States? Is it one that moves rapidly across county and State lines, or is it one that spreads slowly, so that if it is not dealt with, it does not have such dangerous potentiality of spread to other areas? Each one has its own circumstances. Each one poses a slightly different problem.

ERADICATION OF DISEASES AND PEST CONTROL

So, over the years, we have worked out with the States and with the growers and the industry generally, patterns of control and eradication wherever that is possible. We keep our eyes always on that possibility of eradication so we may take advantage of any new knowledge, or changes in circumstances regarding the infestation or the disease, so that eradication can be achieved.

That is the desirable end point of each of these disease and pest programs. If the growers and the industry can be entirely freed of a disease or pest, they at the same time can be entirely freed of the controls that are necessarily applied by Government at one stage or another for reducing the damage of that pest.

I might mention vesicular exanthema in passing. We will come to that in detail later. The end point in that program is complete eradication of the disease. We are confident it can be reached. When it is reached, industry can be entirely relieved of the restrictions that are made on them by both the State and Federal Governments for its control.

We like to keep our eyes on eradication even though with many of these diseases and pests it seems like a far-off dream. Still, advances and developments do occur. When they occur, we want to have our people and the industry with whom we work in the frame of mind that they will seize the opportunity and make the most of it. In the long run, it means by far the greatest benefits and the greatest savings to the industry and to the taxpayers.

CONSULTATIONS WITH STATES ON PROGRAMS

The committee will recall the budget history of these programs. Last year the committee instructed the Department in its report to discuss these matters with the States and to attempt to work out a long-range program which would be mutually acceptable to the Department and to the States, and then to report to the Congress.

We have made, we think, a great deal of progress along that line. We tried to carry out the committee's instructions. We had several meetings early last year with the State veterinarians and with the State plant board people, who are the people directly in charge of these activities in the States, and discussed our problem freely and

frankly with them. We met a number of times with the Association of Commissioners, Directors, and Secretaries of Agriculture, and with their executive committee. We tried to work out some arrangement whereby we could get closer together in our planning of the work ahead.

We are a good deal closer together. We have regular formal meetings at least once a year with each regional group. We have come much closer in developing the individual State's problems in relation to the national problem as a basis for budget proposals, both by the States and the Federal Government.

We obtained authority to talk with the responsible people in the States about any specific changes in the Federal budget. It was not possible for us to work out the budget on a cooperative basis, but we did take into consideration the discussions we had with them, and then when the Department had made its proposals to the Budget Bureau, those proposals were discussed with the representatives of the States so that they, in turn, would have that information in time to adjust their own budget figures in going before their State legislatures.

Mr. WHITTEN. I appreciate that statement. I want to say that we have always found you and others of your group cooperative with the committee.

REDUCTION IN BUDGET FOR CONTROL PROGRAMS

Again we are finding that the budget has cut out the funds for some of these control programs, prior to working out agreements with the people taking over the job. I realize some discussions along that line may be essential to get the States to take over. The thing that disturbs me is the stress on research and the Extension Service, both of which are good and both of which I have supported over the years. But I hate to see any sharp curtailing of control programs, pending the time that you may work out other arrangements.

On the one hand, we find it is argued that the States should spend more money for control programs, and the Federal Government should reduce its share in advance. And on the other, we find tremendously larger Federal contributions to States for research and extension, in advance of having any assurance as to how those funds will be used by the States.

The record then further shows that, however much money may be given to State experiment stations, when the national interest requires some special research project, which the States themselves are also interested in, there has to be an allocation of additional money from the Research Administration to the States to get the work done.

I mention this to show some of the complications that this committee faces in trying to work out what it will recommend to the Congress to meet the overall problems of agriculture.

Mr. PETERSON. May I address myself to that matter?

Mr. WHITTEN. Yes.

Mr. PETERSON. Most of these control programs with respect to insects and diseases change in the intensity with which they affect agriculture as time goes on. The last time the budget was up I was in State work. I was on the other side of the street and was quite exercised, along with a number of other State people, about the appropriation that had been made.

DISTRIBUTION OF RESPONSIBILITIES BETWEEN STATES AND FEDERAL GOVERNMENT

The States then, through their organizations, approached the Department with respect to attempting to reach an understanding. I, perhaps, could say also that the Department people approached the States when that matter was under discussion. One of the big problems here, as we view it, is that there are not any mutually agreed to criteria between the States and the Federal Government as to where the responsibility of one begins and the other leaves off.

There are in the hands of the technical people some views with respect to the size and intensity of distribution and related factors with respect to these pests.

When a pest becomes of wide distribution and, in fact, becomes a management problem on the part of the people engaged in agricultural production, there is one set of factors that apply. When the pest is a new introduction, an incipient outbreak, and there are States which do not have that pest, usually the new problem can only be met by action of the Federal Government.

Currently, as Dr. Clarkson has indicated, there are meetings scheduled with an appointed committee of National Association of Secretaries, Commissioners and Directors of Agriculture, where we propose to go into the question of developing mutually acceptable criteria, or guides, with which to determine where the Federal responsibility lies and where the State responsibility lies.

Further in that connection, each State and our people need to sit down together to determine the pest problems within that State, the facts of the problems, the resources of the Federal Government and State government available to meet those problems, and putting all those together, with the prior development of criteria as far as they can be developed, build a proposal that the national pest and disease program in the plant field is of a certain size. Here are the facilities of the State, and here are the facilities of the Federal Government.

Through that approach we can come up with a budget that meets the problem and also recognizes the respective spheres of responsibility of both the State and the Federal Government.

It is further to be recognized that this must necessarily be a cooperative program, because, as I understand it, the Federal Government cannot exercise police or control powers within the jurisdiction of a State, the Federal power goes only to the interstate movement. When it comes down to the matter of actually confining the pest within the territorial confines of the State, the State police power must be used and is being used.

I want to assure this committee that we are developing agreements with the States as to where the responsibility of both the Federal Government and the State Government lies in this whole area.

BURROWING NEMATODE

Mr. HORAN. May I comment on that, Mr. Chairman? I am happy to see this being done. I notice there is the budget item here. That does not disturb me. I think it reflects a healthy approach to the whole matter of controlling any given outbreak in any given State

r group of States. Mr. Natcher and I were very happy to sit down ith the Governor of the State of Florida on this burrowing nematode roblem. We are happy to see one of our sister States take a healthy ook at it, and rising to what appeared to us to be their own responsi- ility in the State.

At the same time we felt that the Federal responsibilities were not eing ignored and that we were taking steps on that. I assume by his time that you have made provisions for increasing the nematol- gists down there, so that we can go about the business of defining he areas of infestation and setting up the facilities cooperatively to ttack this matter.

Dr. CLARKSON. That is correct. We have put in additional help on esearch, and also we have set aside $35,000 of the contingency fund o aid in the delimiting of the outbreak and to determine what the nterstate potentialities are. With each finding of nematode in- estation, the State of Florida is taking regulatory control of the rea. Our people are working actively with them on that problem ow.

Mr. HORAN. If the committee will permit, I would like to have one f you, perhaps, Mr. Hoyt or Dr. Popham, discuss the plight of urserymen of Florida. There is a real problem. The organized nd commercial nurserymen are part of that picture. They have ny sympathy and I would like to see this thing cleared up, and Federal facilities inaugurated to see that we know how to cope with he interstate shipment of ornamentals and citrus stock out of Florida.

But you get in to the myriads of private nurseries down there who o not ship interstate but who are a source of infestation for the citrus ndustry of Florida. It is developing into a State problem. We annot police all that. There are perhaps thousands of them, because veryone of those operators down there, if he is any size at all, has his wn little nursery. There was some complaint that some of the etired people do ornamentals in their backyard. That is a State matter. The minute we send a Federal man in there it is different. And not many people in the Federal Government can wear the mantle f authority well.

Mr. PETERSON. May I make one further comment there? One of he principal functions of regulatory programs is to keep the channels f commerce and trade open, so that the products of agriculture may move freely interstate. The way they keep those channels open is to afford protection to the uninfested areas of the country from ship- ments coming from infested areas. That necessarily becomes both a State and Federal responsibility.

Dr. CLARKSON. In the State of Florida, the State people under the direction of Mr. Ayres, whom you met there, I think, have allotted between seventy-five and one hundred thousand dollars to this job. We have allotted $35,000 to aid them and to work out the interstate aspects of the problem.

STATE-FEDERAL COOPERATION REQUIRED

Mr. HORAN. I was happy that we had the meeting with the Gov- rnment and the Federal and State people. I was very happy to sit n with them and cite some experiences we had had in this pest con- rol work in the State of Washington. I wrote our Director for a

roundup of that experience. They came through with an excelle
letter, also a copy of a folder that outlined all our horticultural la
in the State of Washington. That was sent last week to the peo
of Florida. This Federal Government, of course, is a cooperati
movement between sovereign States. We have to be very careful
the extension of Federal authority within State borders.

Mr. WHITTEN. I think I should make this comment. I doubt
there is any one in the Congress more critical than I have been
many of the activities in this field.

When it was the Bureau of Entomology and Plant Quarantine,
had investigated it repeatedly. I will not review all the findings
to the mechanical setup and the lack of cooperation and that ki
of thing.

No one has been more critical than I on this grasshopper progra
as it first started. We have tried to improve it. I am fully awa
that, if the Federal Government will just put the money in the
States without any strings or requirement of cooperation, it w
continue year in and year out. On the grasshopper program, as
recall, for a period of 10 or 15 years, we spent millions of dollars ea
year, and each year it was under an emergency description. W
have on this committee consistently urged that this group insist
State cooperation. We have been the ones who have pushed for tha

With regard to Mr. Horan, I can recognize the problems he me
tioned. However, I do not think this is any conflict of the States a
the Federal Government. Without exception the States are urgi
you to keep these appropriations, so far as I know. They are glad
have you do it, and they certainly do not resist your efforts to do t
things that you might wish to do.

I have to consider the budget recommendations in line with wh
we saw in the budget last year, where funds were cut out for brucello
eradication. There is much pride being taken by the Department
the eradication of TB, brucellosis. The committee put funds ba
last year and pointed out the fallacy of the budget recommendation
Apparently the administration is now very proud of the work that
being done. I am glad they have been cooperative enough to g
ahead and do it. It was this committee that insisted on it. All t
way through the budget for the last 2 years there has been terri
curtailment of action programs, soil conservation, forest fire fightin
with the States, and so forth. There has been emphasis on mo
research, payments to State experimental stations, and the Extensio
Service.

I am not against the increases. I am just opposed to them at t
expense of programs where people are working and doing things.

This budget cuts the money out in these fields, without prior agre
ments with the States to take it over.

SUGGESTED FLEXIBILITY OF FUNDS AVAILABLE FOR CONTROL PROGRA

I am wondering, and believe me, my whole approach has been t
try to get more results, if we should restore the amount and give t
your organization more discretion as to the allocation of it. Instea
of our pinpointing it and saying it must be used for certain thing
perhaps we should provide the money but leave to you a greater degre
of discretion, so that you have the money where you need it but a
not required to release it to the State where it refuses to cooperat

STATE PARTICIPATION IN PREPARATION OF 1956 BUDGET

Mr. HORAN. You will recall our action last year. I was in full accord with it. It was based on the fact that the States had not been advised of this action on the part of the Federal Government. The restoration was made upon that basis. I now would like to hear from Assistant Secretary Peterson as to what action the States have taken, with the full knowledge of every implication that is involved in this matter.

Mr. PETERSON. In response to that question, Mr. Horan, and Mr. Chairman, I think it would be incorrect to say that the States knew these budget figures before they were put together. They were advised, as Mr. Wheeler pointed out, by special arrangements through the Budget Bureau, what the figures were after they were put together. It would likewise be incorrect to say that all the States, particularly some of those affected, are in accord with what has been done in this budget.

On the other hand, quite a number of States, and particularly the western plant board group, were not in accord with carrying these programs forward in exactly the same fashion budgetwise year after year. They recognize that there are changes that have taken place with respect to these programs, and after these pests are widely distributed and widely established the area within which they are established becomes essentially a management program with the man on the land. As far as the perimeter is involved, where the infestation does not exist, that program is a Federal program.

QUESTION OF DEPARTMENT ERADICATING OUTBREAKS PROMPTLY

Mr. WHITTEN. Could I interrupt you there. Here is the other side of that. I mention it only so the two sides may be considered. Is it wise business for the United States Department of Agriculture, with its widespread activities, to stand by and let something spread from one locality and become a Federal problem before we lend our efforts to eradicate it? I can point out to you so many hundreds of millions of dollars we have spent, because at the outset somebody did not move in fast.

Mr. PETERSON. It is certainly unwise to let any outbreak, be it pest or disease, spread from its incipient stage into a conflagration.

Mr. WHITTEN. Isn't that what the western people——

Mr. PETERSON. No, sir.

Mr. WHITTEN. They say once it spreads out and gets into a big area, it is a Federal responsibility.

Mr. PETERSON. The approach to the control of insects was through the use of quarantine. There were many uses of quarantine which were based on other than biological factors. The plant boards of the country took the leadership, along with some people in the Federal Department, to try to approach the quarantines on purely a biological basis. It was understood that these pests do not read quarantine signs, that the quarantine is a last-resort type of thing.

COOPERATIVE INSECT DETECTION PROGRAM

In the last 10 years many of the States, and the program is sprea ing, have developed what is called survey and detection units with their respective divisions of plant industry or equivalent organizatio within the State. The Department is cooperating with the States that survey and detection work, putting funds into it. In a numb of States the extension people are cooperating. I can speak with so familiarity in my own State of Oregon. That State has a three-w agreement. I can cite an example where through that type of wo we found two new pests, one in 1943 and one in 1946. It happen to be an oriental fruit moth, a pest that we do not have. You ha some in your area, Mr. Horan. Because we found this pest in i incipient stage, we were able to eradicate it where it began. Th detection program is being carried forward and is spreading througho the country.

I am certainly in accord with the thought you expressed, M Chairman, that the point to destroy these pests is where we find the as quickly as we can find them. The survey and detection progra affords, we think, a very opportune means of doing that. After th become spread out, as some of these destructive pests are, this criter that I spoke of becomes important. I think there is considerable ho of success in developing an agreement with the States as to wh type of situation is Federal responsibility and what type is Sta responsibility.

Mr. HORAN. Mr. Chairman, may I comment on that? You ma recall we had Dr. Knipling answer some questions. I inquired abo the boll weevil. I think the situation is bad. You have those sma acreages down there. Your testimony is that the tenant farme down there that have less than 5 acres have still been cut, that th are on relief.

Mr. WHITTEN. That is landowners. There are many landowne that do not have any acreage.

NEED FOR CLARIFYING STATE RESPONSIBILITY

Mr. HORAN. I feel for those small people just as much as you d I realize when you get an economic condition of that nature it is ba If the boll weevil gets into those small tracts and they are already the doldrums, it is going to be bad. They are not able as individua to take care of that, fight the boll weevil in any way; they are subje to becoming pest farms, there is no question about that. In fightin the boll weevil, as I recall Dr. Knipling's explanation of it, we do n have uniform State action throughout the cotton States. It is m opinion that unless we can work out, as you are indicating now, vigorous State program and a vigorous Federal program, with all t money you need to fight these diseases, we are not going to go a place. The problem within the State is something that we are goi to solve a lot faster if we have the State responsibility as clear crystal.

I think you have to have more economic units in agriculture.

Mr. WHITTEN. I think, Mr. Horan, we have a distinction witho a difference. I do not question the need for the States to do the things. I rather have urged through the years that we try to wo

out some way for the States to take over where they should and can. I do doubt that, prior to that time that those are worked out, the Federal funds should be eliminated on the basis of making them do it. It is not commonly known in many places, but grants of funds to State experiment stations, land grant colleges, and extension services are beyond the control of the Congress or of the Federal Government. They operate under memorandum agreements. The State experiment stations do a good job of trying to keep the research administration advised of what they are doing; but they are entitled to do what they please in the final situation.

FLEXIBILITY IN USE OF FUNDS

The point I am making here is that in all likelihood the best answer would be that we make these funds available without too much direction by the committee as to how they actually will be used.

I do not believe you can ever get 48 States to agree. I do not believe you can keep down duplication. I do not believe there is any criteria that you can work out, no matter how hard you may work, that will fit each case. As soon as you work it out, State officials will change, and it will be a new day. I wonder if it is not sound to make this situation fluid, appropriate the money so that the Department will have some leverage in working things out with the State. I do not believe in cutting out the money first and saying, "Now the States have to take this up."

Mr. HORAN. I agree with that arrangement. The effort should be made.

Mr. WHITTEN. Certainly. We have repeatedly urged that the effort be made. We have found fault with this organization, back through the years, for turning its money loose and carrying the thing on and on, sometimes without any State help at all.

Mr. PETERSON. In the first place, as near as I can determine, there has been no thought of cutting down one place to overemphasize another place. The approach has been to achieve a balance between programs. I do not say the end result is the correct one. We are all human and judgments have to be applied, but the direction has been to try to balance the several programs which the Department of Agriculture is responsible for.

Secondly, we all recognize that any criteria should be flexible enough to actually permit recognition of the wide differences in geography, topography, and——

Mr. WHITTEN. And people.

Mr. PETERSON. Yes. We recognize that the personalities responsible for these programs in the State and in the Federal Government are changing from time to time. Nonetheless, there is a realistic basis for making an approach to that basic determination of how far the Federal Government should go and how far the State should be expected to go. That necessarily must be worked out and reviewed constantly, because conditions are changing with respect to individual infestation, and with respect to commerce and agriculture, types of agriculture. This is a job which we are talking about here, gentlemen, which I do not think will ever be completed because it has to be revised as you go along in light of conditions.

Mr. HORAN. Until it fits every locality.

Mr. WHITTEN. We have more or less surrendered the practice we had of reviewing every project. That is in the field of research. With subsequent developments, we have seen certain weaknesses cropping up again. In that field, there has been some latitude and some degree of ability to shift from one project to the other. We have not had that in the control programs. I am raising the question, if perhaps in view of all the complexities that have been brought out here, it would not be well to stress the same approach that we have had in the research projects. We will still expect the State involved to provide money and have an understanding with you. We are not trying to get you to send them a check prior to working out some assurance with them that they will do their part. But we need to give you some latitude so that you in turn can make the program fluid.

Mr. PETERSON. We are willing to explore the possibilities of that, Mr. Chairman.

DIFFICULTY OF OPERATING CONTROL PROGRAMS ON STATE BASIS

Mr. MARSHALL. Mr. Chairman, I followed Mr. Peterson's explanation here with a considerable amount of interest. Since last year the State commissioners of agriculture met in my district. We were very pleased to have the Secretary of Agriculture in the district to speak to the commissioners of agriculture. However, after the Secretary left, they deliberated over some of their problems, and there was a considerable amount of sentiment, I might say an overwhelming amount of sentiment expressed by the State commissioners of agriculture concerning the difficulty of these control programs, and operating control programs on the State basis.

In this past 2 years there was developed a considerable amount of controversy over that point. It seems that judging by the sentiment expressed by the State commissioners of agriculture, Mr. Peterson, they do not go along with the attitude of the Department in that regard.

Mr. PETERSON. I was at the Minnesota meeting, and want to say first that we enjoyed the hospitality of you people up in Minnesota. It was unfortunate that at the time the weather was somewhat inclement.

I was a commissioner of agriculture, director as we call them, in Oregon before coming here and one time president of that association. I have been talking with and working with the people in the Federal Government and the Department and within the States during that period of time.

My observation is that while the association last year did adopt a resolution bearing on this subject, that the actual cooperative efforts and the freedom and the closeness of the working relations between the States and the Federal Government is at the highest peak at the moment that I have seen it in my experience in this type of work.

They did adopt a resolution last year asking for, or sustaining the Federal effort in this area at the existing level. There were some other factors involved in that decision, but that was their decision.

On the other hand, we have since that meeting had two meetings with the executive committee of the national association officially. I also met with them unofficially when they were in town. They went through this whole problem. They have agreed through this executive

committee to the procedure which I have here been outlining for the consultations and a further consultation is tentatively scheduled now for early March.

DESIRABILITY OF STATE COOPERATION IN RESEARCH PROGRAMS

Mr. MARSHALL. I am glad to know that. There did seem to generate a considerable amount of discussion from that phase of the meeting.

We were talking and have been talking about the control programs. We have just completed going over some of the matters in connection with research, a considerable amount of local, State cooperation with the Federal Government and on all of those items—and if we should follow this pattern of working on the control program so that the States assume more responsibility for those items, then ought it not to follow that the regular research items that we have just covered should be followed in much the same pattern?

Mr. PETERSON. If this was the correct assumption, Mr. Marshall, I should say yes. I would like to point out that we are not saying that the States should necessarily assume more control. We are trying to find out how much control should be in one place and how much in the other.

We may come back and say that the Federal Government has larger responsibilities. We may say the State government has larger responsibilities, or they may both increase or decrease. I think that will vary over periods of time as the pest problem changes its complexion.

Mr. MARSHALL. You would feel there would be a correlation of the policy as between the two approaches, the States and the Federal Government. You wouldn't be thinking in terms of one approach in one instance and another in another?

Mr. PETERSON. No.

Mr. MARSHALL. You would think both would follow a parallel course in that regard.

Mr. PETERSON. Yes, in some particulars. I think the same general patterns in this whole matter of Federal-State cooperation need to be followed in that the States and the proper Federal representatives sit down together and jointly evaluate the particular program that is under review at a given time, whether it be research or regulation or service or markets or what have you.

LOSSES FROM VESICULAR EXANTHEMA

Mr. MARSHALL. Do you have any figures available to show what the cost to the taxpayers of this country is within the failure of one State to regulate vesicular exanthema?

Mr. PETERSON. No, I do not.

Mr. MARSHALL. That was a tremendous sum of money.

Dr. CLARKSON. We have the figures on that in the past 3 years. It runs close to $6 million.

Mr. ANDERSEN. That would be just about the answer to Mr. Marshall's question, would it not?

Dr. CLARKSON. In addition to that, the States have spent tremendous amounts, and industry has sustained a tremendous loss.

Mr. ANDERSEN. Let alone what loss the farmers have sustained.

Dr. CLARKSON. That is what I meant, the meat industry, the stockyards, transportation companies and all. This disease was not dealt with when it was confined to one State.

FLEXIBILITY IN USE OF FUNDS

Mr. HORAN. Is this yours or the budget's decision?

Mr. PETERSON. The budget was prepared in the Department of Agriculture.

Mr. HORAN. Did the budget alter your decision?

Dr. CLARKSON. There was no change.

Mr. HORAN. Then I am very much in favor of what the chairman is suggesting. But if we put that money back in, you are not following out the thought that we are going to let you run your shop.

Mr. WHITTEN. May I interrupt, Mr. Horan, to say if we do it we would put strong words in the report to indicate our understanding as expressed in this testimony here.

We would definitely have to indicate that we are not freezing these funds to the budget as set up, but in considering all the aspects of this problem, we had an understanding that these were not frozen to the particular program, so as to carry out what we are talking about.

Mr. PETERSON. I know the Department wants the closest scrutiny by the Members of the Congress and this committee of all of the work that we are doing. I have been in public work a long time, and feel too strongly about our system of operation to say otherwise, that we welcome the type of careful investigation that you people are here making. We certainly want that close working relationship.

Mr. WHITTEN. I would like to say the committee appreciates your practical approach and frankness in discussing this.

Again, I realize that budgets mean something, justifications mean something, and your testimony means something. The work as you spell it out here, and the use of the money as you spell it out here, you will be expected to substantially carry it out on that basis. That is the way the system works.

I am discussing perhaps a 10 or 15 percent latitude.

Mr. PETERSON. My feeling is that general approach within some similar limits to what you outline might be very well. I think Dr. Clarkson and his people could more properly express their reactions in the light of their experience, as to such a measure.

Dr. CLARKSON. I would agree. That kind of flexibility would enable us to meet changing conditions better than when each item is set down without any flexibility.

Of course, the appropriation item does in itself give flexibility, but we are giving such close attention to the individual dollars and cents in our testimony that we have felt constrained to not change those amounts in any wise during the coming year unless we would come back and make an issue of it with your committee.

I would suggest one thing. I know the committee already has this in mind because it has been expressed at one time or another this morning. In each of these programs there are several aspects to be considered. Some of those aspects, such as the actual control and suppression and eradication activities within a State, are always done under the authority of the State. So, of course, there must be adequate State authority before that activity takes place.

Then, there is the far-reaching survey, which may go into many States where the problem does not now exist and where they are presently little aware or little concerned about the problem. But in order to protect all the States we must make those surveys to know the size and extent of the problem and in order to be prepared to meet it.

Then, there is the problem of Federal quarantines and the inspections to assure compliance with them. That, of course, is done by the Department. Usually, we have the complete cooperation of the States in putting on any quarantine. Sometimes that is not so, and it has to be put on in any event. That calls for activities on our part in a State where the State may not be doing anything on this particular program, and may not be interested, because again we have to protect the 48 States and not just the one.

All of these activities are important to consider. We can not leave any of them out of the picture.

RESEARCH ON THE FARM

Mr. NATCHER. I believe, if any group of people see the effects of research, it probably would be our county agents throughout the United States. In discussing matters on research, Mr. Peterson, with some of the county agents of Kentucky, I find that they feel as follows:

> Research is of little or immediate value unless it is adopted by the farm people. Kentucky needs more research work, and the extension staff needs far better facilities to bring about the adoption of improved practices based on sound research. We believe that more research work should be done actually on the farm. Kentucky is doing a limited research project with marketing and poultry production specialists working intensively with about 30 flock owners and with the marketing agencies for the marketing of those flocks.
>
> We believe that type of marketing research can be extended to other enterprises such as sheep and cattle and so on.

Mr. Peterson, you will agree that more research should actually be done on the farms.

Mr. PETERSON. Certainly. The only purpose of research, perhaps not the only, the major purpose of research is to make available to the man on the farm the information which he needs to carry on his farm enterprise and meet the many problems of production and marketing which he has. There can be no question about that. I like to think of the research in about this fashion, that your basic research creates a reservoir from which the information is drawn to conduct your applied research, and your applied research is the tool which the farmer uses to carry on his production and marketing enterprises.

Mr. NATCHER. Thank you.

NUMBER OF PERSONNEL

Mr. WHITTEN. How many additional people are you requesting?

Dr. CLARKSON. In these control programs a net decrease, I believe, of 43. We have an increase of 12½ positions on the Insecticide-Fungicide Act enforcement. That is offset by the decreases in the plant and animal disease and pest control programs.

Mr. WHITTEN. What additional work do you intend to do with those men? How will they be assigned and what will they be doing?

Dr. CLARKSON. If it is agreeable, I would like to ask Mr. Hoyt to discuss the details of these programs.

Mr. HOYT. Your question has reference to this proposed increase for the insecticide work, I take it.

Mr. WHITTEN. Yes.

ENFORCEMENT OF MILLER BILL—INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT

Mr. HOYT. The enforcement of the new legislation, which is known commonly by the name of the Miller bill that passed the last session of Congress, puts emphasis on the insecticide unit for the usefulness of products which are developed by industry and offered for use in the pesticide field.

This increase is to provide additional staff, technical people to do that work.

Mr. WHITTEN. Briefly, could you put in the record what is required under that bill? I do not mean in its entirety but a brief summary.

Mr. HORAN. I believe that will be reflected also in the Health, Education, and Welfare budget, because it places what we hope to be a better working arrangement for determining what is implied in the use of any insecticide.

I was on the select committee that held hearings over a number of years on this subject. I helped Dr. Miller pass this bill through the House. We think it is a step forward. Again, Mr. Chairman, it brings in the proper activity of the Federal Government in this matter, because insecticides are used throughout the 48 States, in some cases, in every State, the same insecticide.

Dr. CLARKSON. If you would like, Mr. Chairman, we have in the notes beginning on page 28 a pretty full discussion. Perhaps you would like to have that inserted in the record.

Mr. WHITTEN. I would like to have that inserted in the record.

(The material referred to follows:)

Increase of $75,000 to carry out additional responsibilities under Public Law 518, approved July 22, 1954, amending the Insecticide, Fungicide, and Rodenticide Act

Need for increase.—Public Law 518, 83d Congress, which amends the Federal Food, Drug, and Cosmetic Act, was approved July 22, 1954. Under its provisions, there is placed upon the Department the responsibility of determining whether pesticide chemicals for which tolerances are sought are useful for the purposes intended and whether the proposed tolerances reasonably reflect the residue likely to result from the proposed uses. The certifications of usefulness and expressions of opinions on residues must be accomplished within 30 days, or within 60 days if due notice has been given. The work required by the act is mostly in addition to the current registration work. Current work already extends the existing staff to the utmost.

The new functions under Public Law 518 relate to pesticides whose use results in residues in or on raw agricultural commodities used for food or feed. Quite different considerations from previous studies are required. The work on petitions will vary widely because of differences in pharmacological, phytopathological, and pesticidal effects of products for which tolerances are sought. It will be necessary for various scientists, including chemists, entomologists, pharmacologists, and pathologists to evaluate voluminous residue data and data on composition, application, and effectiveness of products. The workload on the scientific staff per petition will vary considerably. It will probably vary from 4 days per petition to as much as 20 or 25 days for the more difficult and involved cases. On an average, it is expected that a total of approximately 10 days of the scientists' time will be required per petition. Industry is increasingly refining and improv-

ing its chemicals so as to develop new uses, and finding additional uses for particular chemicals. From experience with the pesticides now on the market and the number of new chemicals coming on the market each year, it is estimated the approximately 200 petitions need to be analyzed and evaluated per year. This would represent a workload of approximately 2,000 days, or approximately 8 man-years of scientific personnel. Clerical and filing assistance related to this workload would also be required. The proposed increase is based on these requirements.

Plan of work.—The funds requested would be used to—

(1) Review petitions submitted, for the creation of a tolerance or exemption, to determine the usefulness of the specified pesticide chemical in agriculture. This function involves a chemical and biological evaluation of the data submitted by the petitioner (resulting from his own experimental effort or that of others); consideration of other related data available from scientific literature, State, and Federal files, or otherwise available; and acquisition and consideration of related expert knowledge of scientists qualified in the fields involved.

(2) Evaluate the residue data contained in the petition to determine whether the tolerance proposed by the petitioner reasonably reflects the residue likely to result when the pesticide chemical is used as proposed. This responsibility requires an appraisal of the analytical methods used and a determination of the maximum residue likely to result under ordinary conditions and practical methods of removing residue.

(3) Establish and maintain coordination with the Department of Health, Education, and Welfare relative to determinations of usefulness and opinions on residues and keep current with tolerances promulgated by that Department.

(4) Establish procedures for providing a prompt administrative hearing for each applicant adversely affected by proposed certifications of usefulness, as required by Public Law 518, and prepare and present written and oral evidence to substantiate the Department's position in such hearings, effecting prompt means of communication with regard to notice of certification, requests for extensions of time, and notice of hearings.

(5) Maintain records of applications under consideration, previous certification or refusal of certification for each chemical proposed, and complete records of chemicals and uses for which tolerances have been established by the Department of Health, Education, and Welfare.

JUSTIFICATION DATA ON PLANT DISEASE AND PEST CONTROL

Dr. CLARKSON. I might, if you permit, suggest that we also insert pages 83 to 99 which cover this whole field of plant disease, including the work with insecticides.

Mr. WHITTEN. That will be fine.

Dr. CLARKSON. I think that will fully answer your question.

(The justification pages referred to follow:)

PLANT DISEASE AND PEST CONTROL

CURRENT ACTIVITIES

The work is divided into three categories: (*a*) Insect and plant disease control which is designed to protect agriculture from destructive insects and plant diseases, including inspection to detect and appraise infestations, certification of regulated articles, supervision of treatments required by plant quarantines, applications of pesticides, and use of other methods of combating infestations; (*b*) protective measures, primarily inspections at ports of entry, which are carried out to prevent the introduction from abroad of pests and plant diseases, and certification of the absence of plant pests on plants and plant products for export; and (*c*) administration and enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act to prevent the sale of mislabeled and inadequately labeled economic poisons, and to safeguard farmers and other users from injury to crops, livestock, or themselves, and from loss resulting from deceptive, careless, or fraudulent marketing practices.

Selected Examples of Recent Progress

PLANT PEST CONTROL

1. Japanese beetle infested area is becoming stabilized

Except for the discovery in July 1953 of a well-established outlying infestation of Japanese beetles centered in the rural area around Sheldon, Ill., and encompassing several thousand acres in Illinois and Indiana, the generally infested area in northeastern United States was fairly well stabilized. The Japanese beetle was found for the first time in a few new localities, but none was found in any State from which they had not been previously reported. There were small extensions of the Federal-State regulated areas in North Carolina, Ohio, and Pennsylvania, and as a result of surveys early in the fiscal year 1954 State quarantines were amended to include additional areas in southern West Virginia and in Illinois and Indiana near Sheldon.

An amendment to the Federal Japanese beetle quarantine became effective in the spring of 1954 making it mandatory for aircraft operators, both civilian and military, to provide and apply sprays to aircraft leaving infested airfields during the adult season.

In February 1954 new treatments were authorized approving the use of toxaphene, heptachlor, aldrin and dieldrin in field plots and in April 1954, an ethylene dibromide injection treatment for balled nursery stock was approved on a limited basis.

2. Infestation of sweetpotato weevil increased slightly

Losses in a single Louisiana area in 1953 were estimated at $1¾ million due to environmental conditions favorable to weevil outbreak. While there was an increase of 38 percent in the intensity of the infestations during the year, there was little increase in the numbers of new infestations found.

From 1937 through 1953, the weevil has been apparently eradicated from 53 counties of Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas. During 1953, planting restrictions were removed from 1,149 formerly infested farm units. Infested counties in the 6 cooperating States were reduced from 54 to 50.

3. Citrus blackfly in Mexico threatens Texas citrus industry

Six infestations of the citrus blackfly, outside of the known infested area in Mexico were found in Nuevo Laredo across the Rio Grande from Laredo, Tex., in late May 1954. This infestation, like that in Matamoros, Mexico, found in 1953, is a real threat to the Texas citrus industry, since only the narrow channel of the Rio Grande River separates the citrus plantings in Mexico from those in Texas. Eradication steps were taken immediately. It is hoped that this infestation was found before the insect had an opportunity to spread and become established in Texas.

The infestation reported last year in Matamoros, Mexico, has apparently been eradicated. Repeated inspections in that city have failed to reveal the blackfly. Incipient infestations, however, have been found throughout the citrus-growing area of northeastern Mexico, north of the area of general infestation. These, too, have been eradicated as fast as discovered.

4. Mexican fruitfly discovered for first time in Far West

Early in 1954 the Mexican fruitfly was discovered in Tijuana, Mexico, a short distance from the international boundary. In August 1954, a single live female fly was trapped in San Ysidro, San Diego County, Calif., which adjoins Tijuana. In cooperation with the officials in the Republic of Mexico and in California and Arizona, intensive surveys were immediately initiated in both countries to determine the extent and nature of this infestation. A spray program was undertaken in both countries surrounding the points of discovery. The State of California immediately placed part of San Diego County under quarantine regulations. To prevent infested mangoes from reaching the northwestern Mexican market, temporary fumigation facilities were established in cooperation with the Mexican Government at Hermosillo, and inspection stations established at strategic points. While it is yet too early to determine the results of these emergency measures, it is hoped that this immediate action will prevent the Mexican fruitfly from becoming firmly established near California. Because of the numbers and kinds of fruits grown in this region it is expected that if this pest does become established there, it will be far more serious and difficult to control than in the citrus area of Texas which becomes infested annually.

5. Incidence of phony peach disease decreased

Incidence of the disease was drastically reduced in both Alabama and Arkansas in 1953. There was a slight rise in disease incidence in Louisiana, Missouri, North Carolina, South Carolina, and Texas. It was discovered for the first time in Lancaster County, S. C. Outstanding progress was made in suppressing the disease in the Fort Valley, Ga., area. After 3 years of area-wide control the percentage of trees infected has been reduced from 8 to 3.2 percent. Disease incidence in the 10 State area dropped from 2.4 percent to 1.8 percent.

A survey for this disease in wild plum resulted in the finding of infected plums in 40 counties of 6 States. Three nurseries in the phony peach regulated area, with less than 500 trees in all, were denied certification because of the possibilities of infection being introduced from neighboring areas.

6. Incidence of peach mosaic declines

There was a slight increase in the incidence of peach mosaic disease during the fiscal year 1954. Surveys for mosaic were made in 63 counties of 10 States during 1954. Trees inspected totaled 2,518,000 of which 3,840 were infected, or 0.15 percent as compared with 4.16 percent in 1935.

Two counties in Arkansas and two in Texas have been released from the States' standard peach mosaic quarantine.

In 1954, 153 nurseries growing 1,275,830 nursery trees to be offered for sale during the 1954–55 selling season, together with their one-half mile environs for phony and 1-mile environs for mosaic, were inspected in 26 regulated counties of 9 States. Additional protective inspection was made of 42 nurseries growing 2,606,055 nursery trees and their immediate environs beyond the regulated areas. In the mosaic regulated area, 21 budwood sources and their 1-mile environs were likewise inspected and certified.

None of the nurseries in Arizona and New Mexico was certified because of the general peach mosaic infection occuring in these States. The pest-control officials of Arizona and New Mexico have agreed not to issue certificates for out-of-State shipments of the regulated products from nurseries in their States.

7. Barberry eradication efforts continued

Barberry eradication work continued in 18 cooperating States to eliminate all species of barberry and mahonia that serve as alternate hosts of the stem rust disease of wheat, oats, barley, and rye. Of the 1,033,457 square miles now in the barberry-eradication area, 956,054 square miles are in a maintenance status. This 92 percent of the area will require only a low-cost maintenance program to hold the high degree of barberry control that has been attained. There remain 29,345 square miles that require initial work and 48,058 square miles need rework one or more times in the future.

Field tests with hormone-type herbicides were continued this year in Pennsylvania, Virginia, and West Virginia and gave satisfactory kill of the barberry. Work procedures have been modified to conform more closely with recent observations on the ecology of the barberry. Factors such as light, soil type, available moisture, and plant cover, as well as competition, temperature, and slope, have been found to account to a large extent for the pattern of distribution of escaped barberry bushes. This modification is particularly adaptable to the rework program, since the pattern of distribution has been largely determined in the initial surveys.

8. State and farmer cooperation aids pink bollworm control

There was much less spread of the pink bollworm in 1953 than in the 2 preceding years. The thorough cultural control program in that part of south Texas, where some $30 million damage occurred in 1952, resulted in a much smaller carryover and a substantially lighter infestation in the 1953 cotton crop. Infestation in central Texas was markedly heavier than in 1952 but was considerably reduced in extreme western Texas, New Mexico, Arizona, and Oklahoma. Quarantine measures in much of the area under regulation are of a precautionary nature to prevent further spread. Continued dry weather has permitted early cleanup which resulted in reduced populations.

As of July 1, 1954, 10 counties in Oklahoma, 3 in Louisiana, and 2 in Arkansas were found infested for the first time. As a result of the new findings, the entire States of Oklahoma and Texas were included in the quarantined area. In Arkansas 6 southwestern counties in addition to 2 actually found infested were included, and in Louisiana 5 parishes were added to the quarantined area including 2 noninfested parishes located between the old quarantined area and the newly infested parishes.

Six parishes in south central Louisiana were released from quarantine sinc repeated inspections over a number of years have proven to be negative.

State mandatory cultural controls were required during 1953 on 2,400,000 acr of cotton produced by 48,200 growers in Texas and 347,000 acres by 33,500 growe in Louisiana. Emergency cultural control areas were established in 8 Arkans counties and voluntary programs were supervised in some 50 counties of ea Texas. Excellent farmer cooperation was received and the programs throughou all areas are believed to be the most successful on record.

For the first time since cultural controls were inaugurated, farmers were allowe to apply growth-arresting herbicides to cotton fields where picking had not bee completed by the deadline dates. Approximately 5,000 acres on 100 farms wer treated with the herbicide.

Florida promulgated a regulation in 1953 prohibiting the planting and produ tion of cotton, including dooryard or ornamental plants, in 19 southern Florid counties. This regulation has expedited the removal of dooryard cotton whe found by crews engaged in ridding southern Florida of wild cotton and individually grown cotton plants.

9. Golden nematode located in additional New York areas

In fiscal year 1954, new infestations of the golden nematode were found o 1,156 acres on Long Island, N. Y. The majority of the fields containing thes infestations were intermingled with or adjacent to known infested fields in Nass and Suffolk Counties. In most cases the infestations are known to occur only i spots on the properties involved. Three additional nurseries and retail plan sales establishments were found infested, making a total of 97 to date.

A compensation program for the purpose of preventing increase and sprea of the nematode was continued during the year. Owner-operators of 943.1 acres withheld their land from potato or tomato production. The Federal an State governments shared equally in reimbursing the owner-operators at th rate of $60 per acre.

Surveys for the golden nematode in tomato- and potato-producing regions o 14 Southeastern and Southwestern States were negative. Approximately 5,30 soil samples representing 40,800 acres were collected and processed with nega tive results.

10. Invested zone of white-fringed beetle decreased by 11 percent in 3 years

While the 1953 surveys indicated an expansion of the infested area by 45,78 acres to a total of 422,500, 3 years' control work shows a net reduction of ove 11 percent in land infested by the white-fringed beetle. The gross figure include 156,000 previously infested acres that are not now known to be infested. No only has the infested zone diminished, but beetle population densities have de clined each year since DDT came into extensive use for controlling the pest. A preliminary summary of the 1954 survey indicates the infested acres found amoun to approximately 27 percent less than the infested acreage found in 1953.

These population reductions are largely attributable to extensive soil treatment that have been applied by States, farmers, industrial firms, and private individual Funds expended for the 1953 control work were supplied approximately as follow Industrial firms, communities, and individuals, 21 percent; farmers, 20 percent railroads, 10 percent; nurserymen, 8 percent; State agencies, 9 percent; and th Federal Government, 32 percent. Late in the fiscal year dieldrin was accepte by the Department for control of the white-fringed beetle on nongrazed, non cropland.

11. Hall scale eradication efforts accelerated

An extension of an earlier infestation at Chico, Calif., was detected during 195 and treatment was immediatey undertaken. In the Bidwell Park and Stilso Canyon infestations in Chico and in the city of Oroville, Calif., all propertie within a 2,500-foot radius from the center of each infestation were treated durin the final months of 1953. At Davis, Calif., due to the lightness of the infestatio treatments were limited to a 1,000-foot radius. The findings of an infested seedlin at Bidwell Park in 1954 where eradication was presumed to have been complete will involve retreatment or removal of an additional 1,700 trees. An increase i funds contributed by the California Department of Agriculture, made it possibl to employ six fumigation crews and purchase additional equipment and materi during the 1953–54 season. Continued host removals throughout the year totale 3,935 and greatly reduced the number of hosts needing treatment.

4. Gypsy moth found for the first time in Michigan

A serious outlying infestation of gypsy moth was found in the vicinity of Lansing, Mich., late in May 1954. This infestation represents the most westward advance of the gypsy moth. State and Federal authorities initiated an immediate survey to determine its extent. It was subsequently found in several scattered locations in the Lansing area. Within 20 days of the initial discovery, 86,400 acres, including the entire city of Lansing, were sprayed by aircraft. DDT was applied at the rate of 1 pound per acre. Trapping of a million acres in Michigan after spraying indicated excellent treatment results, only 4 of the 5,000 traps capturing male moths.

During the spring of 1954 more than 1,400,000 acres were sprayed by cooperating Federal, State, and local agencies and organized groups of individual landowners in the States of Connecticut, Maine, Massachusetts, Michigan, New York, Pennsylvania, and Vermont. Following the most damaging year in the history of the gypsy moth in the United States when 1½ million acres were defoliated, populations of the gypsy moth in the generally infected area in New England and New York dropped considerably. In 1954 slightly less than one-half million acres were defoliated, the greatest reduction in damage occurring in Massachusetts.

13. Grasshopper control saved crops worth $10 million

Grasshopper infestations on private and public rangelands totaling 787,580 acres in Colorado, Idaho, New Mexico, Oregon, Texas, Utah, and Wyoming were controlled in 1954. Work on State and privately owned rangelands were generally financed one-third each by the ranchers, the States, and the Federal Government. Federal land-managing agencies and private individuals using the public domain participated in programs on Federal land by contributing services, equipment, supplies, and funds. During 1954, contract aircraft was used almost exclusively.

Surveys have indicated that a tremendous acreage of previously treated land remains practically free of infestation. In Wyoming, for example, the 4½ million acres of range that were cooperatively treated from 1949 through 1951 required little attention this year. Equally significant long-range protection has been given smaller areas in Arizona, California, Idaho, and New Mexico. State leaders reported that crops having an estimated value of approximately $10 million were saved as a result of grasshopper control in 1953.

Supplementing organized control efforts in 1953, farmers in 20 States bore the full cost of controlling threatening to severe grasshopper infestations on an estimated 1,600,000 planted acres. Federal personnel assisted these farmers by conducting surveys to determine the locations, density, and species of grasshoppers threatening crops, and by advising on preparation and use of recommended insecticides.

14. Mormon cricket infestations reduced

A thorough survey preceding the 1954 field operations supplied timely and accurate information on which to base control operations. Over 121,500 acres in 6 States were baited during 1954 including approximately 58,600 acres in Utah, 39,600 in Nevada, 20,000 in Montana, and the remainder in Idaho, Colorado, and Wyoming. As a result of this work the population buildup was checked and the known infested area sharply reduced. It is estimated that approximately 80,000 acres may need attention in 1955. Aldrin baits spread by aircraft are still the recommended control for Mormon crickets.

15. Economic insect survey

In order to strengthen the collection of information and detection of any newly introduced insects, a plan was initiated whereby joint State-Federal employees devote full time to the gathering of information concerning insect occurrence, outlook, and injury. One State operated under this plan during 1953. By the end of 1953, 7 States were committed to the program, and by June 30, 1954, a total of 18 States had entered into such cooperative arrangements.

During 1953 the economic insect survey section cooperated in special detection surveys to obtain information on the European corn borer in the Western States, and on the cotton stem moth, European chafer, and *matsucoccus* scale in the Eastern and Northeastern States. In 1954 considerable attention was given to assisting the States in determining the distribution of the khapra beetle, a recently discovered introduced pest of stored products.

16. Emergency outbreaks of insects and plant diseases (contingency fund)

During the fiscal year 1954, $528,940 was released from the contingency fund to enable the Department to participate in suppressing emergency outbreaks of grasshoppers and Mormon crickets in Idaho, Kansas, Montana, Nevada, California, Utah, Colorado, New Mexico, Oklahoma, and Texas. A table reflecting the use of the contingency fund for emergency outbreaks in 1953 and 1954 is attached.

Outlook for current fiscal year regarding emergency outbreaks—(a) Grasshopper and Mormon cricket control.—Preliminary observations indicate that the trend in grasshopper populations is upward in the seven States of California, Montana, Oklahoma, Oregon, Texas, Washington, and Wyoming. In Colorado, Idaho, and New Mexico conditions are expected to remain about the same as during 1954. Mormon cricket infestations should be generally less extensive except in Montana and Wyoming, where increases may be expected.

Releases from the contingency fund and date of release, fiscal years 1953, 1954, and 1955 to Dec. 31, 1954

Project	Fiscal year					
	1953		1954		1955 (to Dec. 31, 1954)	
	Amount	Date	Amount	Date	Amount	Date
Emergency outbreaks of insects and plant diseases (contingency fund):						
Grasshoppers in Wyoming	$75,000	July 1952				
Grasshoppers in Idaho	4,000	do	$96,440	June 1954		
Grasshoppers in Custer National Forest, Mont.	5,000	do				
Mormon crickets in Nevada, Oregon, Utah, Idaho, Colorado, and Montana.	5,000	do				
Grasshoppers in New Mexico	80,000	do	41,000	June 1954		
Grasshoppers in Arizona	29,700	Aug. 1952				
Mormon crickets in Nevada, California, Utah, Idaho, Montana, Colorado and Wyoming.	210,000	Apr. 1953				
Grasshoppers in Texas	30,000	May 1953				
Grasshoppers in Texas, New Mexico, Oklahoma, and Kansas.			128,900	July 1953		
Grasshoppers in Colorado			190,000	June 1954		
Mormon crickets in Utah, Nevada, California, Idaho, and Montana.			72,600	Apr. 1954		
Mexican fruitfly control					$135,000	Sept. 1954
Khapra beetle					56,000	Do.
European chafer					50,000	Dec. 1954
Total released from contingency fund.	438,700		528,940		241,000	
Contingency fund reverting to Treasury at end of year.	61,300		71,060			
Balance of contingency fund					159,000	
Total	[1] 500,000		600,000		400,000	

[1] Excludes $500,000 transferred to "Eradication of foot-and-mouth and other contagious diseases of animals and poultry, ARA."

(*b*) *Mexican fruitfly.*—An outbreak of the Mexican fruitfly in northwest Mexico has caused a major threat to the entire California-Arizona fruit industry. It has been necessary to draw upon personnel and facilities presently engaged in the control of this insect in Texas to meet this emergency. An amendment to the law governing the control of incipient or emergency outbreaks of insects and plant diseases was enacted by the 83d Congress. It permits the use of such funds in Mexico for cooperation with the authorities in that country. Under the authority of this amendment, $135,000 was released from the contingency fund for controlling the outbreaks of Mexican fruitfly. The State of California, San Diego County, and industry are supporting this work to the extent of $139,000; the State of Arizona, $10,000; Mexican Department of Agriculture, $10,000; and Mexican industry, $23,000.

(c) *Newly introduced pests.*—Three new pests have recently caused considerable crop damage. At the present time some work of a preliminary nature is being done on these problems by technical personnel, in cooperation with the States. The three pests are as follows:

European chafer control: The European chafer is a destructive introduced pest whose larvae feed on and destroy the roots of many cultivated plants, including pasture grasses, lawns, small grains, and nursery stock. It is known to be established in northwestern New York, where the State with such technical assistance as can be given by the Department is attempting to confine it. Recent extensions of the generally infested area in New York and the constant threat of long-distance dissemination through the movement of nursery stock and other commodities, including soil and gravel, have made it imperative for the Federal Government to become more actively involved in preventing the further spread of this destructive pest. An amount of $50,000 has been released to combat infestations in the vicinity of Buffalo, Syracuse, Elmira, Niagara Falls, and Liverpool, N. Y.; Meriden, Conn.; and at Capon Bridge, W. Va. It is estimated that $36,000 will be available from State sources in carrying out their share of this work in addition to approximately $15,000 required from industry to comply with the regulations.

Khapra beetle control: The Khapra beetle, a newly introduced pest of stored products, was discovered in November 1953 infesting grain in California. The larvae of this insect are cosmopolitan feeders and have subsequently been found in this country in wheat, oats, rye, barley, flaxseed, pinto beans, blackeye peas, and alfalfa seed. The beetle is known to develop on all grain either moist or dry and grain products, including bread, crackers, noodles, and macaroni, soybeans, peanuts, castor beans, and other commodities. In cooperation with the States, a survey of grain warehouses in 11 Western States was initiated in 1954 to determine the distribution of this pest. It is now known to exist only in storages in parts of California, Arizona, and New Mexico. Control and regulatory programs were undertaken by the State departments of agriculture in cooperation with the owners to control or eradicate known infestations and reduce the hazard of spread from them. Research on the control of this storage pest is underway. A hearing on the proposed establishment of a Federal quarantine was held December 1, 1954. To initiate an adequate joint Federal-State and industry program of survey, inspection, and treatment, $56,000 as released from the contingency fund. States are prepared to contribute approximately $57,500 to the program, and the cost to the grain, seed, and feed industry in providing the insecticides, labor, and equipment needed to carry on a successful program of disinfesting establishments already involved will amount to approximately $125,000.

Imported fire ant: The imported fire ant is an annoying and destructive introduced pest in the southern United States, occurring in localities along the gulf coast and as far north as central North Carolina. It is omnivorous, feeding on many cultivated plants and often attacking young animals. In homes it will feed on meat, animal and vegetable products, and even clothing at times. Because of its painful sting, this ant often interferes with the cultivation of crops and the pasturing of animals. In view of the severe damage this pest can inflict and the indication that it has not as yet become established throughout its ecological range, consideration is being given to a cooperative program with the States to arrest its further spread and to provide property owners with the technical guidance they need to protect themselves from further serious annoyance and injury.

17. Insecticide, Fungicide, and Rodenticide Act

(a) *Pesticide regulation found effective.*—Recognition by farmers of the increasing need for crops of better quality, produced more economically, has been reflected in increased registration of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act. Basic research, experimental work on new pesticide chemicals, and the development of better techniques of pest control, have contributed to this activity. In 1954 compared with the previous year, there was an increase of about 20 percent in the number of new products registered and an increase of 25 percent in the number of amended registrations. The increase in amended registrations is largely due to the acceptance of a number of new uses (particularly on food crops) for previously registered materials such as malathion, dieldrin, and heptachlor. The proportion of new and amended label submissions found to be acceptable was considerably higher than that found acceptable in previous years. Registrants have for the most part accepted the necessity for evidence of effectiveness and safety before submission of products for registration.

Among new pesticides found acceptable for registration are streptomycin for control of apple and pear fire blight, endrin, Systox and Chloro-IPC on certain

food crops, organic phosphates such as diazinon and Bayer L 13/59 for the control of house flies, and insecticide-fertilizer mixtures. These new uses, when originally proposed, raised problems of public health through toxic residues and have required careful study and consultation with the United States Public Health Service, the Food and Drug Administration, and other Federal agencies concerned to avoid injury to humans and domestic animals.

With the expiration on June 25, 1953, of the 5-year period following the effective date of the act, it was necessary to notify registrants of the expiration of all registrations made during the 1949 fiscal year. While this required additional work, it cleared the records of dead materials, including the names of firms which had gone out of business and discontinued products. About 3,500 registrations were canceled.

The following table summarizes the registration activities:

Registration activities

Activity	1950	1951	1952	1953	1954	1955 (estimated)	1956 (estimated)
Submissions received [1]	20,203	16,609	17,275	19,906	21,098	20,000	20,000
Carryover from previous year	429	378	269	394	435	400	400
Total submissions requiring action	20,632	16,987	17,544	20,300	21,533	20,400	20,400
Registrations:							
Original registrations	4,007	3,422	2,761	3,536	4,002	4,100	4,200
Supplemental registrations	3,193	3,569	4,853	5,325	7,419	6,000	6,000
Total registrations	7,200	6,991	7,614	8,861	11,421	10,100	10,200
Letters of criticism written	14,909	13,864	14,721	17,086	18,208	17,000	16,000
Pending at end of year	378	269	394	591	304	300	300

[1] Includes original submission, submissions of corrected labeling, and supplemental submissions in instances where the originally registered products were in some manner changed after registration.

(*b*) Enforcement work under the act is being aided by reports which are furnished from the States on cases of adulteration and misbranding which are uncovered by their own investigators. Reports of this kind are followed up to clear the situation on a national basis.

Steps have been taken to establish closer liaison with Federal and State research and extension personnel to achieve an interchange of information on registration actions by the Department and research developments and practical experience with these products by State and Federal personnel.

Special attention has been given to lindane vaporizers which have been widely advertised to the public and which may, if improperly used, cause injury to people who breathe the fumes or eat food contaminated with the lindane. Samples of most such products on the market were examined and in a considerable number of cases seizures were made and correction of the labeling or product required.

The continued introduction of new chemicals for pesticide use has necessitated the development of better methods for their analysis and testing.

The following table summarizes the enforcement activities:

Enforcement activities

Activity	1950	1951	1952	1953	1954	Estimated, 1955	Estimated, 1956
Samples examined:							
Not previously sampled	1,204	1,212	1,034	1,132	1,134	850	850
Old products	1,017	850	1,051	1,178	667	700	700
Total	2,221	2,062	2,085	2,310	1,801	1,550	1,550
Violations (mislabeled and/or adulterated products)	570	560	572	454	411	400	385
Actions taken on violations:							
Warnings	91	116	102	113	125	100	100
Citations	438	413	399	291	242	240	240
Seizures	67	54	71	50	44	40	40
Prosecutions	12	20	10	5	5	20	5

(c) *Functions under Public Law 518.*—Public Law 518, approved July 22, 1954 provides a method for setting tolerances for pesticide chemicals offered for registration under the Federal Insecticide, Fungicide, and Rodenticide Act when applied to raw agricultural commodities. It requires this Department, as a prerequisite for the consideration by Health, Education, and Welfare, to review each petition for tolerance and certify as to the usefulness of the pesticide for the intended purposes. The Department must also render an opinion to Health, Education, and Welfare as to whether the proposed tolerance or exemption reasonably reflects the residue likely to result from the proposed uses. This necessitates a thorough evaluation of the data submitted and the analytical methods used to arrive at the proposed tolerance. The Department has initiated a review of all registered labeling to determine if existing directions for use will result in residues in line with announced tolerances or if revisions in directions for use will be necessary. This review will assist the industry to comply with Public Law 518 more expeditiously and economically. Such review will have to be continued until tolerances are announced for all chemicals currently registered and may continue through calendar years 1955 and 1956.

PLANT QUARANTINE

1. Workload

Attention was centered on the more important plant-quarantine activities in order that the generally increasing normal demands for plant-quarantine protection, as well as unforeseen emergencies, could be met with the personnel available. The work performed was at about the same volume level as in 1953. Significant workload figures follow:

Workload data fiscal years 1953 through 1955 estimated

Item	Fiscal year 1953	Fiscal year 1954	Fiscal year 1955 (estimated)
Inspection:			
Airplanes, approximately 34 percent carrying unauthorized plant material in 1954	79,642	77,029	92,000
Vessels, approximately 30 percent carrying unauthorized plant material both in 1954 and in 1953	52,036	52,311	52,000
Cargo importations of plant material, under permit	74,099	69,317	74,000
Shipments of plants and plant products, inspected or treated, and certified for movement from Hawaii and Puerto Rico to the mainland	8,398	16,100	17,400
Containers of cut flowers and leis for movement from Hawaii to the mainland	417,027	488,849	490,300
Containers, plant material treated or cleaned	2,842,501	[1] 827,656	951,800
Freight cars from Mexico	79,636	81,481	83,300
Foreign mail packages	3,718,205	3,949,054	4,200,000
In cooperation with Customs:			
Vehicles from Mexico	13,499,714	14,367,589	15,200,000
Baggage, airborne, pieces of	2,247,419	2,275,714	3,400,000
Baggage with surface-borne passengers from Mexico	3,923,907	3,664,803	3,840,000
Baggage with ships' passengers, number of passengers	1,147,372	1,169,801	1,300,000
Interceptions:			
Unauthorized plant material, all sources	174,543	170,603	210,000
Lots of insects and plant diseases of plant quarantine significance, all sources	18,030	15,904	18,900
Export certificates issued:			
Covered 11,850,609 containers of domestic plants and plant products exported to 113 foreign countries in 1954; 9,031,986 containers to 116 foreign countries in 1953	29,643	33,476	37,800

[1] Decrease largely due to change in cotton regulations in May 1953 which removed the necessity for fumigation or other treatment of cotton samples.

2. Improved utilization of manpower and resources

For the most effective use of personnel, 3 ports were closed, 1 was opened, and the responsibilities and duties of personnel were studied and realined where necessary. To meet emergency situations personnel were temporarily reassigned to aid with ocean traffic diverted from New York during the month-long strike at that port. With the finding of the Mexican fruitfly in Tijuana and Mexicali, inspectors were dispatched to the opposite United States ports of San Ysidro and Calexico on temporary assignment, pending arrangements to augment the staffs at those ports for the purpose of preventing movement of the pest into California. As a result of the June flood in the Rio Grande, inspectors were temporarily

reassigned from Laredo and Eagle Pass to Brownsville and Hidalgo to assist in clearing rail and vehicular traffic diverted to those points.

3. Changes in customs procedure adversely affect plant quarantines

Studies were made of the effect of the new customs procedure for the inspection of baggage. Customs inspectors now thoroughly inspect a minimum of one piece of baggage for each passenger, additional pieces being examined under certain conditions. Formerly all baggage was given some degree of customs inspection, a procedure relied upon heavily as a plant quarantine safeguard. A study of interceptions of contraband plant material at the port of New York showed 37 percent fewer interceptions from ships' passengers' baggage and a 22 percent decrease in interceptions from plane passengers' baggage as a result of the new procedure. Further study confirmed the fact that baggage is an important avenue for pest entry. Despite the reduction in attention currently given baggage by Customs, the 1954 records indicate that 60 percent of all interceptions of unauthorized plant material are taken from baggage. An effort was made to increase the plant quarantine participation in baggage inspection to offset to some degree the decreased Customs' attention to this important channel of plant pest entry.

4. Leafhoppers from Fiji threaten Hawaii

For the third time since 1952, leafhoppers which are known vectors of the destructive Fiji disease of sugarcane have been found on planes from Fiji in large numbers. A strong aerosol treatment was promptly used to destroy these insects. Neither the leafhopper nor the Fiji disease of sugarcane are known to occur in Hawaii. The disease is so serious that it is feared if it should become established in Hawaii it would profoundly affect sugarcane production in those islands.

5. Horseradish importations bring quarantine problem

Due to Middle West drought conditions, horseradish production was deficient in 1953 and numerous shipments were received from abroad. Of the 32,617 containers imported, over 20,000 were required to be fumigated. In addition, because many of the shipments came from countries in which the golden nematode is known to occur, it was necessary to inspect them carefully to determine freedom from contamination with this serious potato pest. Contaminated shipments were required to be processed or treated in the New York metropolitan area where the hazard of escape of the nematode would be negligible.

6. Insect and plant disease interceptions

During the year 10,358 insect interceptions and 5,546 interceptions of plant diseases were made from the 170,603 lots of interceptions of plant materials, or from the ships, planes, or other vehicles carrying them. These interceptions included such serious plant pests as citrus canker, golden and oat nematodes, Cancrosis "B" and black-spot disease of citrus, giant African snail, citrus blackfly, horseradish and garlic weevils, Asiatic rice borer, Mediterranean and other fruit flies, beet leaf miner, and grape and olive moths.

7. Export certification increased

During the year 33,476 certificates, 12½ percent more than in 1953, were issued to cover the export of nearly 12 million containers of plants and plant products. The number of containers were 31.2 percent more than in 1953. Certificates were issued at 50 different ports for a wide variety of agricultural products consigned to 113 foreign countries. Service is available to enable exporters to meet the plant quarantine import requirements of the countries of destination.

8. Foreign quarantines changed

As the result of finding the golden nematode in Mexico in 1953, and additional findings in 1954, and due also to the reported occurrence of the potato wart disease in three locations in Mexico, the potato regulations were amended to prohibit the entry of potatoes from certain Mexican States which had heretofore been permitted to export potatoes to this country. A system of safeguards, similar to that in effect against pests of Puerto Rico, was inaugurated to protect the continental United States against pests of the Virgin Islands.

9. Foreign quarantine changes since July 1, 1954

Early in fiscal year 1955 refinements in the procedures for treating Hawaiian papayas, based on research developments, were authorized. These decrease the costs of treatment, both to the Government for plant-quarantine supervision and to the shipper for the treating operation.

USE OF EMERGENCY FUND

Mr. HOYT. Before you proceed, could I mention the fact that we have drawn from the contingency fund, which this year is $400,000, for four emergency programs totaling $276,000. We are confronted with a situation, based on our surveys for grasshoppers for this year, which has led to the submission of a supplemental estimate in the amount of $700,000. I believe that is just about on the verge of reaching the Congress at this time.

Mr. WHITTEN. We are glad to have it. I would like to have the information supplied in a letter from Mr. Peterson on February 1 with regard to your use of these emergency funds included in the record at this point. The committee is aware of it. That is the reason we are not going into it in detail.

(The letter referred to follows:)

DEPARTMENT OF AGRICULTURE,
Washington 25, D. C., February 1, 1955.

Hon. JAMIE L. WHITTEN,
Chairman, Subcommittee on Agricultural Appropriations,
House of Representatives, Washington, D. C.

DEAR CONGRESSMAN WHITTEN: The Department of Agriculture and Farm Credit Administration Appropriation Act, 1955, contains the item: "Plant and animal diseases and pest control * * * of which $400,000 shall be apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects and plant diseases under the joint resolution approved May 9, 1938 (7 U. S. C. 148–148e) to the extent necessary to meet emergency conditions."

In the late 1920's an unknown malady appeared in a citrus grove at Winter Haven, Fla. From the initial grove it spread, slowly at first, until by the mid-1930's it had become of such importance that the Florida Agricultural Experiment Station undertook a study to determine the causative organism associated with the so-called spreading decline. It was not until 1953 that a plant pest, known as the burrowing nematode, was found to be responsible for this condition. While this nematode does not kill trees, it debilitates them to the extent that their fruit is unmarketable. Control is exceedingly difficult and costly by presently known methods. The nematode attacks citrus roots at levels often 4 or more feet underground, and is now known to survive on many plants other than citrus grown in nurseries.

The Florida State Plant Board has undertaken an extensive survey to determine the distribution of this pest in citrus groves and in nurseries within the State. As infested nurseries are found, restrictions are placed on them to prevent further widespread dissemination through these channels. Because of the seriousness of this pest and the widespread dissemination throughout the country that may result from the shipment of infested plant material into uninfested areas, it has been necessary to release $35,000 from the contingency fund for the control of incipient outbreaks of insects and plant diseases as the Federal share of an adequate joint Federal-State program of surveys, inspection, and treatment. To finance this undertaking the State has made emergency allotments of $70,000 available in addition to their regular funds and a substantial outlay for badly needed research.

This release, together with the $135,000 previously authorized for Mexican fruitfly control, the $56,000 authorized for khapra beetle control, and the $50,000 authorized for European chafer makes a total of $276,000, thus leaving a balance of $124,000 in the contingency fund.

We shall be glad to furnish any further information you may wish. A similar letter is being written Senator Young, Senator Russell, and Congressman Andersen, and a copy is being sent to Mr. Pope.

Sincerely yours,

E. L. PETERSON, *Assistant Secretary.*

EXAMINATION OF PASSENGER BAGGAGE AT PORTS OF ENTRY

Dr. CLARKSON. Before we leave this, I have an item that involves both the plant and animal quarantine. We have been having discus-

sions for over a year with the Bureau of Customs of the Treasury Department on problems of the examination of passenger baggage of people coming into the United States. It is discussed——

Mr. HORAN. I have some questions I want to ask in general on quarantine.

Mr. WHITTEN. You might cover quarantine at the moment and then we will go back to the other activities.

Dr. CLARKSON. The point I wanted to bring to the committee's attention was that we rely on the Customs to do the police work at the ports of entry. They hold the goods, baggage, or whatever else it is that needs examination. If they are cargo or commercial shipments covered by plant or animal quarantines, they are held until one of our people can examine them and release them. Upon that release, Customs makes their release after dealing with the payment of duty and the other responsibilities that they have.

On examination of passenger baggage, we regularly intercept many thousands of prohibited or restricted plant and animal materials coming into this country from all over the world. The volume of work has increased very materially over the last 10 years. The Bureau of Customs has found that their ability to meet the volume of work has become increasingly more difficult. In the handling of passenger baggage, we supply the technical assistance, people who know the kind and characteristics of the products that are involved in agriculture quarantines and who are able to make disposal of that which is found in passenger baggage. But we must rely on Customs to find them. It would be intolerable to have 2 sets of inspectors going through the same baggage, 1 after the other. Customs follows the practice of holding for the examination and disposal by our people those pieces of baggage that contain plant or animal material.

During the last year the Bureau of Customs has found it necessary to reduce the numbers of inspectors assigned to this kind of work. They made a change about a year ago in their procedures at many of the larger ports of entry. Instead of all of the baggage being susceptible of examination, they gave their inspectors authority to reduce it to as little as one piece of baggage per traveler. That does not make as much difference in plane travel as it does in travel by ship, particularly those ships which are bringing people across the oceans with large volumes of baggage. Many of the passengers are immigrants and they bring all sorts of material with them.

We noticed when this change was put into effect that the volume of interceptions we had been accustomed to dropped very markedly. We could not say that the material was there, but history and past experience would indicate that it must have been there.

We worked out with the Bureau of Customs a test at the port of New York wherein a certain number of ships were given a full inspection for a 30-day period, and the results contrasted with those from the same ships during a 30-day period, I believe it was 6 months before.

It was found that the numbers of interceptions did rise very dramatically; in fact, even more than we had expected. We do not know what the reason may be for it being more than expected, unless passengers had generally become aware of the changed procedure and were less careful themselves in screening the material that they had in their baggage.

We have had discussions with the Bureau of Customs, urging them to find some way in which this volume of baggage can be given thorough scrutiny.

I wanted the committee to be aware of our problem. We are, we think, not meeting the responsibility here, but at least at the moment the wherewithal to do it seems to be out of our hands.

Mr. WHITTEN. We appreciate your calling that to our attention. Our experience with pests and other things of foreign origin make us realize just how serious this is for the future. I trust you will keep us advised of developments. It represents a very serious problem and one that cannot be cured by having a duplicate set of inspectors at every point where customs officials now are.

Dr. CLARKSON. That would be intolerable, Mr. Chairman. We have gone a long way toward having many of our inspectors deputized as customs inspectors or customs agents so they may interchange their work and so on. We do not think it proper for us to step into this gap with people of our own.

Mr. HORAN. I have noticed that is a very fruitful field for pest entry.

Dr. CLARKSON. It certainly is. In many respects we look upon it as being more important than much of the commercial shipments which do get very careful scrutiny.

ANIMAL DISEASE AND PEST CONTROL

Mr. WHITTEN. Proceeding to the animal disease control and eradication, I mentioned earlier the action of this committee in restoring funds for brucellosis and TB eradication. We made several other restorations of funds that had been cut out by the budget. We will be glad to hear from you as to this general subject.

Dr. VAN HOUWELING. Mr. Chairman and gentlemen, I believe in some other testimony you have received from the representatives of the Agricultural Research Service, such as Dr. Shaw and Dr. Reed, they have stressed the importance of increasing the efficiency of animal production. It is reasonable to assume that these disease-control programs that we carry on cooperatively with the States are actually the application of research accomplishments and result in increased efficiency of food from livestock and poultry.

I would like to know if you wish to consider the programs separately or the group as a whole. We have the TB program, the brucellosis program——

BRUCELLOSIS PROGRAM

Mr. WHITTEN. I would like to include pages 33 and 34, and the table following from the justifications at this point in the record.

(The justification pages follow:)

EXPANDED BRUCELLOSIS PROGRAM

(Conducted with funds from Commodity Credit Corporation)

LEGISLATIVE AUTHORIZATION

Under section 204 (e) of title II of the Agricultural Act of 1954, Public Law 690 approved August 28, 1954, provision is made for the transfer of not to exceed $15 million annually for a period of 2 years from funds available to the Commodity Credit Corporation to the item "Plant and animal disease and pest control" of the appropriation "Salaries and expenses, Agricultural Research Service," for the purpose of accelerating the brucellosis eradication program and increasing the

number and amount of indemnities as an aid to the stabilization of the dairy industry through reduction in the number of dairy cattle and attendant reduction in milk and dairy products. The expanded program will result in culling unprofitable cows from dairy herds.

INITIATION OF PROGRAM

On September 23, 1954, the Secretary approved the initiation of an accelerated brucellosis eradication program for the current fiscal year in the amount of $10 million. Immediately thereafter meetings were held with State and Federal officials, and others interested, for the purpose of determining the most effective program to meet the needs in each State. It was decided to employ local veterinarians to conduct testing operations on a per diem or fee basis. This policy of utilizing the services of veterinarians familiar with local conditions and problems has proven very satisfactory in the past in connection with the tuberculosis and brucellosis eradication programs. Local veterinarians have now been engaged and the program is in active progress.

It is estimated that in the operation of the 1955 program, approximately 16 million head of cattle will be tested of which approximately one-half will be tested under regular funds and one-half under funds available for the accelerated program. It is also estimated that indemnity payments will be made for approximately 225,000 reactors at an average of $25 each, and that an additional 100,000 reactors will be slaughtered without indemnity payment. To receive indemnity, owners must dispose of reactors promptly, but some, for economic reasons, may prefer to retain the reactors under one of the approved plans in the program which permits delayed slaughter without indemnity.

INDEMNITY PER ANIMAL

On October 8, 1954, the existing regulations were amended to pay maximum Federal indemnity payments of $25 for grade animals and $50 for purebreds, a change from $9 and $18. This restored the maximum payments in effect prior to September 23, 1953.

FINANCIAL REQUIREMENTS

To determine the financial requirements, information was obtained from each State on the level at which the expanded program would be operated. Based on an analysis of this information, the Secretary on January 7, 1955, approved an additional $2,700,000 for the program, making a total of $12,700,000 for the fiscal year 1955 as compared with $10 million reflected in the 1956 budget as reimbursable obligations under the item "Plant and animal disease and pest control." The estimated distribution of the funds required for the program is shown in the following table:

	Indemnity payments	Fee testing	Operating costs	Total
Total program	$5,635,569	$6,105,621	$4,733,510	$16,474,700
Less, direct obligations under "Salaries and expenses, ARA"	548,500	80,000	3,146,200	3,774,700
Cost of accelerated program	5,087,069	6,025,621	1,587,310	12,700,000

Fee testing includes such items as vaccinating, tagging, branding, and appraising of animals. Operating costs include such items as the purchase of vaccine, mobile laboratories and other needed equipment, and salaries and travel expenses of field employees engaged in the inspection and testing of animals.

An appropriation to reimburse Commodity Credit Corporation for the costs of this program incurred in fiscal year 1955 will be requested as a part of the 1957 budget estimates.

STATE PARTICIPATION

A comparison of the funds provided for fiscal year 1955 by the Federal Government and cooperating States and counties follows:

	Federal Government	Cooperators
Indemnity payments	$5,635,569	$1,368,978
Operating funds	10,839,131	8,961,109
Total	16,474,700	10,330,087

Each State has been informed of the amount of Federal funds available for the program in order that it may proceed with the planned cooperative program. It is anticipated that in several States, cooperating State officials will request their legislatures at the forthcoming sessions to provide additional State funds for the brucellosis eradication program.

1956 PROGRAM

It is presently estimated that $15 million will be transferred from the Commodity Credit Corporation for this program in the fiscal year 1956, for which an appropriation to reimburse the Corporation will be required in 1958.

The following table indicates the estimated distribution by States for both Federal and State funds for the fiscal year 1955.

Brucellosis eradication, fiscal year 1955

State	Federal funds				State funds [1]		
	Indemnity payments	Fee testing	Operating costs	Total	Indemnity payments	Operating costs	Total
Alabama	$145,000	$102,563	$78,163	$325,726		$45,000	$45,000
Arizona	3,750	19,533	22,337	45,620		33,000	33,000
Arkansas	75,000	121,025	148,081	344,106		50,000	50,000
California	60,000		32,762	92,762		571,248	571,248
Colorado	25,000	57,397	67,588	149,985		12,195	12,195
Connecticut	201	21,758	6,680	28,639	$3,000	80,265	83,265
Delaware	38,211	6,754	18,536	63,501	35,000	25,500	60,500
Florida	16,713	28,240	118,211	163,164	7,000	74,380	81,380
Georgia	105,000	144,593	63,895	318,488	3,000	143,000	146,000
Idaho	69,000	105,919	65,125	240,044	2,500	96,400	98,900
Illinois	400,000	330,049	82,440	812,489		611,788	611,788
Indiana	230,000	192,179	57,361	479,540		119,575	119,575
Iowa	244,999	104,238	112,483	461,720	297,000	305,594	602,594
Kansas						50,000	50,000
Kentucky	75,000	103,207	37,586	215,793		80,000	80,000
Louisiana	225,000	101,323	114,091	440,414		258,355	258,355
Maine	30,963	49,610	62,906	143,479	36,000	44,000	80,000
Maryland	84,605	15,758	30,141	130,504	42,103	63,000	105,103
Massachusetts		24,457	11,824	36,281		40,000	40,000
Michigan	187,776	169,331	117,111	474,218	5,000	180,000	185,000
Minnesota	395,544	982,702	430,185	1,808,431	105,000	873,500	978,500
Mississippi	55,000	214,242	74,503	343,745		92,100	92,100
Missouri	530,400	346,628	122,499	999,527		139,038	139,038
Montana		258,460	196,878	455,338		195,000	195,000
Nebraska	412,998	482,443	67,394	962,835	20,000	100,000	120,000
Nevada	25,000	25,685	41,724	92,409		41,000	41,000
New Hampshire	12,008	36,680	16,476	65,164	14,000	104,535	118,535
New Jersey	36,700	4,425	52,716	93,841	36,000	130,710	166,710
New Mexico	7,699	24,665	56,357	88,721	5,000	3,000	8,000
New York	718,750	171,706	59,516	949,972		1,044,384	1,044,384
North Carolina	31,229		61,085	92,314	15,000	55,000	70,000
North Dakota	5,953	19,583	94,119	119,655	10,000	174,500	184,500
Ohio		67,310	83,250	150,560		245,000	245,000
Oklahoma		121,747	65,092	186,839		75,000	75,000
Oregon	94,407	113,710	142,194	350,311	35,000	150,000	185,000
Pennsylvania	384,771	238,956	62,267	685,994	350,000	900,000	1,250,000
Rhode Island	18	18,877	917	19,812	3,500	17,307	20,807
South Carolina	18,203	14,075	109,005	141,283	10,000	66,437	76,437
South Dakota	42,608	54,130	76,689	173,427	20,000	10,000	30,000
Tennessee	123,292	55,126	70,821	249,239	76,000	105,500	181,500
Texas			16,254	16,254		46,330	46,330
Utah	35,000	23,614	57,102	115,716		30,000	30,000
Vermont	25,000	54,203	44,160	123,363		121,000	121,000
Virginia	25,000	141,411	17,568	183,979		162,450	162,450
Washington	92,960	55,791	179,840	328,591	70,000	200,000	270,000
West Virginia	23,207	62,495	38,928	124,630	10,000	98,000	108,000
Wisconsin	484,543	738,522	252,740	1,475,805	145,875	800,000	945,875
Wyoming	25,000	50,502	44,728	120,230		22,500	22,500
Puerto Rico	14,061	29,999	60,870	104,930	13,000	75,518	88,518
District of Columbia			885,312	885,312			
Total	5,635,569	6,105,621	4,733,510	16,474,700	1,368,978	8,961,109	10,330,087
Less direct obligations	−548,500	−80,000	−3,146,200	−3,774,700			
Estimated reimbursable obligations under expanded program	5,087,069	6,025,621	1,587,310	12,700,000			

[1] These contributions of State funds do not reflect the increased State participation due to the accelerated program.

SUMMARY JUSTIFICATION DATA

Mr. WHITTEN. I will also suggest that pages 99 to 110 be inserte in the record at this point.

(The pages referred to follow:)

ANIMAL DISEASE AND PEST CONTROL

CURRENT ACTIVITIES

Measures are devised to exclude from this country communicable diseases o foreign origin; to prevent the spread of diseases through interstate shipments o livestock or distribution of impure or impotent veterinary biologics; to contr and eradicate livestock diseases; and to maintain, through a marketing agreemen with manufacturers and handlers, adequate supplies of hog cholera virus an serum for protection of swine.

SELECTED EXAMPLES OF RECENT PROGRESS

ANIMAL DISEASE CONTROL AND ERADICATION

1. Eradicating tuberculosis and brucellosis

(*a*) The incidence of tuberculosis in cattle during fiscal year 1954 was 0.1 percent, the same as fiscal year 1953; however there was a slight reduction i the percentage of carcasses found with tuberculosis (not including reactors) i federally inspected slaughtering establishments, as compared to previous years

(*b*) Continued efforts have been made to trace to the herds of origin, animal that show lesions of tuberculosis in slaughtering departments of federally inspecte plants. In the fiscal year 1953, 741 tuberculosis reactors were disclosed as a resul of these tracings. During 1954, 1,613 reactors were uncovered as a result o testing herds from which lesion cases originated, or associated herds. Step have been taken that are expected to increase still further the effectiveness o this phase of the project. During the first three months of the fiscal year 195 208 animals showing tuberculous lesions were reported by Federal inspectors a slaughtering plants. A total of 155 reactors were located by tracing the anima to their origin. In addition, two reports of hogs showing lesions have throug the tracing procedure led to the location of 49 additional tuberculous reactors.

(*c*) The use of the milk test as a screening device for locating brucellosis-infecte herds reached its highest point to date during fiscal year 1954. There wer 932,003 herds representing approximately 16,633,034 cattle tested by this metho with 73.9 percent of the herds classified as negative. The milk test was used i 28 States and Puerto Rico. The test is used most extensively in the Midwes dairy area. This test is a means of rapid identification of infected herds an eliminates the slower, more expensive, individual animal blood test on a large po tion of herds. Continued expansion of the test is expected.

(*d*) The incidence of brucellosis in cattle under supervision was further reduce from 3.4 to 2.6 percent during the fiscal year 1954. Tests were conducted i 696,207 herds representing 9,002,109 cattle, disclosing 235,666 reactors. 80,67 reactors were held for gradual disposal for slaughter without payment of in demnity.

(*e*) 334 counties are now listed as modified, certified, brucellosis-free areas, a increase of 22 over last year. North Carolina, New Hampshire, and Maine a the only States which are completely certified as brucellosis-free.

(*f*) There was an 8-percent increase over fiscal year 1953 in the number of ca vaccinations with strain 19 vaccine developed by the Department some years ag Three million nine hundred and ninety-nine one hundred and one calves we officially vaccinated, bringing the total since the inauguration of this practice i 1941 to 21,346,623.

(*g*) A project was undertaken in New York State to correlate and evaluate th results of extensive vaccinations in a large number of herds over a period of year Results of this survey will increase knowledge of the value of calfhood vaccinatio as an adjunct to the eradication program. Results are now being compiled.

(*h*) Comparison of funds provided by the Federal Government and cooperatin States and counties for the eradication of brucellosis and tuberculosis for the fisc year 1955 is as follows:

	Tuberculosis		Brucellosis	
	Federal Government	Cooperators	Federal Government [1]	Cooperators [2]
Operating fund	$1,750,700	$4,246,010	$10,839,131	$8,961,109
Indemnity payments	325,000	1,051,829	5,635,569	1,368,978
Total	2,075,700	5,297,839	16,474,700	10,330,087

[1] Includes $12,700,000 approved by the Secretary on January 7, 1955, for the accelerated program under the authorization contained in the Agricultural Act of 1954 for an accelerated program of not to exceed $15,000,000 annually for fiscal years 1955 and 1956.

[2] These contributions do not reflect the increased participation by the States due to the accelerated program. It is anticipated that in many cases increased funds will be made available through action by State legislatures when they have the opportunity to take action.

(i) The attached tables show the average State and Federal indemnity payments and other data pertaining to the program for control and eradication of tuberculosis and brucellosis.

Summary of bovine tuberculosis eradication work, fiscal year 1954

State	Herds tested	Cattle tested	Infected premises	Reactors found	Percent reactors
Alabama	2,603	66,579	12	14	0.021
Arkansas	2,429	41,728	6	6	.014
Arizona	1,948	34,698	3	12	.035
California	19,017	688,583	183	676	.098
Colorado	2,791	41,082	3	3	.007
Connecticut	7,816	182,663	76	241	.132
Delaware	2,097	49,780	35	56	.112
Florida	3,279	127,212	13	80	.063
Georgia	3,154	147,703	45	155	.105
Idaho	794	18,781	0	0	.0
Illinois	28,160	522,784	505	1,032	.197
Indiana	32,151	553,289	517	878	.159
Iowa	12,965	288,461	336	522	.181
Kansas	14,443	273,327	96	156	.057
Kentucky	2,076	38,032	18	44	.116
Louisiana	2,790	165,929	125	416	.251
Maine	5,984	66,253	7	15	.023
Maryland	10,721	258,922	88	164	.063
Massachusetts	10,629	196,647	55	156	.079
Michigan	12,196	209,289	483	821	.392
Minnesota	31,739	693,338	94	124	.018
Mississippi	2,282	60,233	2	2	.003
Missouri	12,622	227,437	66	104	.046
Montana	802	15,899	0	0	.0
Nebraska	4,707	91,685	48	80	.087
Nevada	173	2,612	0	0	.0
New Hampshire	7,252	110,675	3	3	.003
New Jersey	11,497	241,569	151	242	.10
New Mexico	1,697	22,412	5	5	.022
New York	44,238	1,288,165	335	1,175	.091
North Carolina	9,537	129,660	2	4	.003
North Dakota	1,434	34,648	33	44	.127
Ohio	27,890	461,189	319	564	.122
Oklahoma	3,451	90,061	17	25	.027
Oregon	21,473	196,680	32	56	.028
Pennsylvania	36,153	610,252	290	978	.16
Rhode Island	1,810	31,762	29	47	.148
South Carolina	2,430	55,536	8	13	.023
South Dakota	2,264	99,677	33	63	.063
Tennessee	1,941	56,786	40	56	.099
Texas	5,633	159,421	67	226	.142
Utah	3,572	32,154	127	179	.557
Vermont	6,818	196,925	31	202	.103
Virginia	11,599	224,372	43	49	.022
Washington	1,974	39,575	16	27	.068
West Virginia	2,006	42,534	21	78	.183
Wisconsin	35,374	901,490	236	881	.098
Wyoming	3,042	30,052	11	11	.037
Hawaii	423	23,916	15	34	.142
Puerto Rico	5,098	91,050	24	167	.183
Virgin Islands	1	258	0	0	.0
Total	478,975	10,234,665	4,704	10,886	.11

Summary of bovine brucellosis eradication in cooperation with States, for fiscal year 1954

State or Territory	Brucellosis blood tests and calfhood vaccinations						Brucellosis Ring tests		
	Herds tested	Cattle tested	Reactors		Reactors held	Calves vaccinated	Herds tested	Positive herds	Estimated cattle represented
			Number found	Percent					
Alabama	3,593	63,114	2,067	3.3	502	56,591	0	0	
Arkansas	3,885	33,657	2,543	7.6	986	89,982	0	0	
Arizona	3,428	25,976	693	2.7	224	11,715	0	0	
California	0	0	0	0	0	367,303	0	0	
Colorado	16,668	129,657	4,008	3.1	2,191	102,336	2,327	484	40,07
Connecticut	3,919	74,010	1,152	1.6	1,123	23,188	0	0	
Delaware	2,403	42,668	810	1.9	5	7,419	2,630	1,637	61,03
Florida	7,271	88,353	1,547	1.8	374	31,543	1,478	289	73,23
Georgia	8,684	178,277	9,538	5.4	289	19,092	114	49	2,05
Idaho	4,840	56,309	1,867	3.3	168	124,829	3,377	1,024	46,09
Illinois	68,235	521,150	13,166	2.5	7,706	171,489	63,087	19,699	1,250,09
Indiana	33,021	281,600	10,626	3.8	6,754	50,665	60,497	16,637	907,45
Iowa	33,644	273,036	16,739	6.1	0	154,693	44,839	14,664	585,61
Kansas	17,055	103,992	3,316	3.2	0	62,095	0	0	
Kentucky	5,192	53,513	1,910	3.6	823	59,397	0	0	
Louisiana	8,991	84,920	8,785	10.3	4,673	72,618	1,139	909	36,66
Maine	7,481	101,280	972	1.0	41	9,529	10,700	449	194,89
Maryland	7,118	174,474	4,960	2.8	1,887	47,560	0	0	
Massachusetts	773	27,269	391	1.4	390	17,876	125	105	3,49
Michigan	10,251	150,191	5,897	3.9	256	21,182	36,970	6,122	369,70
Minnesota	72,587	1,357,209	30,817	2.3	3,262	138,703	184,413	32,160	3,319,43
Mississippi	5,878	73,544	3,572	4.9	219	104,491	0	0	
Missouri	17,540	133,776	7,200	5.4	1,618	82,065	45,828	21,015	638,14
Montana	10,914	255,512	4,970	1.9	4,970	205,270	2,916	238	24,82
Nebraska	11,347	107,628	3,934	3.7	516	80,302	14,820	3,494	182,50
Nevada	707	10,509	321	3.1	213	42,405	0	0	
New Hampshire	8,777	106,382	293	.3	0	13,303	0	0	
New Jersey	8,163	149,550	1,832	1.2	759	21,879	369	130	14,12
New Mexico	4,008	39,843	208	.5	30	15,568	0	0	
New York	31,906	559,428	10,606	1.9	10,606	298,531	1,104	453	24,21
North Carolina	29,105	287,759	1,542	.5	0	1,504	0	0	
North Dakota	18,979	412,275	6,834	1.7	881	38,897	15,231	400	151,70
Ohio	32,234	253,121	8,669	3.4	2,273	72,278	57,252	10,388	701,71
Oklahoma	6,964	75,614	3,239	4.3	0	50,123	0	0	
Oregon	29,840	296,179	1,980	.7	0	72,148	2,075	652	22,64
Pennsylvania	47,063	719,766	7,622	1.1	925	148,290	26,853	1,234	337,95
Rhode Island	322	8,566	62	.7	61	2,832	0	0	
South Carolina	6,770	101,049	1,079	1.1	57	8,772	1	0	3
South Dakota	982	12,775	1,228	9.6	806	147,708	32,987	9,915	494,80
Tennessee	1,618	36,214	785	2.2	174	115,136	0	0	
Texas	16,178	85,957	3,907	4.5	0	35,108	0	0	
Utah	4,684	41,672	1,563	3.8	1,563	23,659	10,417	1,508	116,08
Vermont	3,660	68,915	1,251	1.8	1,251	66,492	0	0	
Virginia	11,668	230,326	6,530	2.8	204	73,524	0	0	
Washington	16,913	221,090	3,636	1.6	432	80,025	20,889	5,437	313,33
West Virginia	6,207	105,331	1,121	1.1	2	7,610	1,071	126	13,85
Wisconsin	35,751	703,943	28,377	4.0	21,094	485,092	285,791	93,035	6,668,79
Wyoming	3,017	31,834	833	2.6	0	55,887	2,453	611	24,53
Puerto Rico	5,972	52,636	668	1.3	364	10,397	250	50	13,91
Virgin Islands	1	260	0	0	0	0	0	0	
Total	696,207	9,002,109	235,666	2.6	80,672	3,999,101	932,003	242,914	16,633,09

Statement of comparative testing, herds and cattle under supervision, modified accredited areas, average appraisal, salvage, and State and Federal indemnity in tuberculosis eradication work fiscal year 1935 to 1954, inclusive

Statement of comparative testing, herds and cattle under supervision, modified accredited areas, average appraisal, salvage, and State and Federal indemnity in tuberculosis eradication work fiscal year 1935 to 1954 inclusive

Fiscal year	Tests conducted		Reactors found	Percent infection	Under supervision		Modified accredited areas [1]	Average during year			
	Herds	Cattle			Herds	Cattle		Appraisal	Salvage	State indemnity	Federal indemnity
1935	2,378,668	25,237,532	376,623	1.5	6,590,863	48,768,627	2,428	$57.55	$15.19	$15.87	$18.70
1936	1,944,624	22,918,038	165,496	.7	6,515,273	59,907,935	2,921	77.66	26.50	10.18	22.44
1937	961,109	13,756,308	94,104	.7	6,745,471	61,640,711	3,030	86.04	28.94	12.20	22.72
1938	1,007,586	14,108,871	89,359	.6	6,471,538	62,640,358	3,124	86.76	32.16	16.41	18.12
1939	750,806	11,186,805	60,338	.5	6,372,726	60,439,030	3,142	89.01	34.49	18.96	15.97
1940	819,408	12,222,318	56,343	.46	6,191,330	61,570,426	3,148	91.65	37.12	20.44	16.20
1941	777,435	12,229,499	40,702	.3	6,235,198	62,696,167	3,151	96.50	40.99	20.95	16.48
1942	681,504	10,983,086	28,008	.26	6,320,006	63,073,213	3,151	109.69	50.35	21.49	16.55
1943	563,413	9,308,936	17,167	.18	6,317,670	63,846,496	3,151	135.19	65.03	27.50	18.75
1944	524,927	8,894,466	18,338	.2	6,153,069	64,519,652	3,151	154.53	59.93	36.07	21.72
1945	484,749	8,105,480	19,534	.24	6,120,528	64,790,921	3,151	161.32	59.78	40.31	22.71
1946	505,296	8,454,463	19,464	.23	6,035,783	65,981,099	[2] 3,150	174.20	69.00	37.26	23.89
1947	515,517	8,312,919	16,666	.2	6,082,666	65,577,421	3,150	199.46	83.55	40.81	24.19
1948	523,924	8,294,423	15,943	.19	6,044,170	66,246,215	3,150	234.60	119.74	38.53	23.90
1949	536,162	8,737,501	17,007	.19	5,985,215	65,419,332	3,150	285.78	139.46	37.68	24.72
1950	539,799	9,439,811	17,733	.19	5,991,703	65,443,353	3,150	272.87	123.24	43.40	25.05
1951	503,933	8,847,228	12,353	.14	5,808,062	64,824,960	[3] 3,149	323.70	174.64	43.59	24.92
1952	488,769	9,164,265	10,351	.11	5,798,865	64,791,861	3,149	346.13	174.05	46.15	25.66
1953	463,159	9,675,245	10,811	.11	5,688,183	67,423,940	3,149	309.47	117.31	49.22	26.12
1954	478,975	10,234,665	10,886	.11	5,681,947	67,937,276	3,149	250.92	82.18	43.76	26.60

[1] Includes Puerto Rico and the Virgin Islands.
[2] Reduction is due to consolidation of 2 counties.
[3] Reduction is due to fact no cattle under supervision in District of Columbia.

Statement of comparative testing, herds and cattle under supervision, average appraisal, salvage, and State and Federal indemnity in brucellosis eradication work fiscal year 1935 to 1954, inclusive

Fiscal year	Tests conducted		Reactors found	Reactors held	Percent infection	Under supervision		Average during year				
	Herds	Cattle				Herds	Cattle	Appraisal	Salvage	States paying indemnity [1]	State indemnity	Federal indemnity
1935	212,482	3,317,760	381,010		11.5	187,109	2,936,347	$56.86	$19.87	1	$27.99	$24.29
1936	470,788	6,674,709	457,104		6.8	449,644	5,780,418	70.65	27.44	2	20.57	26.86
1937	630,917	8,021,167	397,864		5.0	719,452	7,877,612	70.67	27.94	5	19.25	26.45
1938	671,310	7,837,443	324,532		4.1	1,035,454	9,447,137	80.37	32.07	10	20.36	26.69
1939	724,613	7,591,398	219,165		2.9	1,372,410	11,111,643	97.17	33.97	28	26.09	20.00
1940	590,393	6,937,428	171,953		2.5	1,615,755	12,315,329	90.85	34.99	36	17.12	14.96
1941	677,544	7,465,254	182,075		2.4	1,883,914	13,932,693	93.28	37.68	40	17.19	15.19
1942	591,835	6,891,219	209,238	39,586	3.0	2,105,294	15,627,027	99.19	52.06	41	17.71	15.83
1943	392,636	5,185,228	197,329	53,558	3.8	2,199,535	16,616,522	128.03	64.87	40	18.63	16.77
1944	386,266	5,235,912	226,079	75,499	4.3	2,254,235	17,326,138	143.34	59.75	40	22.54	19.30
1945	395,236	5,213,458	243,050	86,738	4.7	2,307,585	17,545,638	139.35	56.63	40	22.14	19.25
1946	389,814	4,876,866	245,786	74,922	5.0	2,360,699	17,870,154	149.65	68.64	40	22.07	19.34
1947	454,789	5,133,814	232,293	68,977	4.5	2,249,118	17,589,018	178.25	82.93	40	23.44	20.64
1948	533,936	5,434,792	232,199	68,653	4.3	2,291,760	18,128,318	203.98	107.38	39	24.44	21.17
1949	563,501	5,671,347	226,691	66,351	4.0	2,165,364	17,126,480	256.46	132.11	37	25.67	23.41
1950	618,801	5,974,721	208,298	60,686	3.5	2,299,556	18,527,624	237.68	114.21	31	25.16	22.75
1951	565,155	5,640,836	172,322	60,418	3.1	2,324,621	19,197,790	326.85	189.45	22	23.47	21.41
1952	670,738	7,491,327	314,260	179,101	4.2	2,149,078	21,496,113	334.68	189.39	25	26.03	24.05
1953	660,344	7,860,870	268,348	149,628	3.4	2,102,545	21,607,676	276.52	122.52	25	25.59	22.32
1954	696,207	9,002,109	235,666	80,672	2.6	2,298,284	24,572,013	190.90	89.18	26	20.64	11.71

[1] Beginning May 1, 1939, Federal indemnity payment limited to not exceed total amount paid by cooperating State agencies. Includes Puerto Rico.

NOTE.—Federal indemnity was not paid for reactors held in calfhood vaccinated herds.

2. Eradicating scabies

(*a*) *Sheep scabies campaign brings good results.*—An intensive scabies eradication campaign has continued in Louisiana and Mississippi. This all-out drive continues to bring increasingly good results but occasional scabby sheep are still being found.

During the year sheep scabies was reported as existing in 183 counties in 21 States, with a total of 391 flocks with 40,894 infected sheep located. 5,477,334 sheep were inspected for scabies, and 390,530 were dipped. This existing infection represents a serious threat. At the request of major sheep raisers associations, as well as many individuals, the Department is giving attention to a total eradication program.

(*b*) *Cattle scabies outbreak controlled.*—An outbreak of psoroptic cattle scabies occurred in the Midwest and Southwest involving 14 counties in 6 States. However, this outbreak was quickly brought under control and all known infection eradicated. Efforts to locate any possible existing infection are continuing.

During the year cattle scabies was reported as existing in 38 counties in 14 States with a total of 64 herds comprising 10,749 cattle located. 1,090,260 cattle were inspected for scabies, and 32,844 were sprayed or dipped. During November 1954 the disease was noted in Illinois and Colorado. The outbreak was traced to the State of Colorado and prompt action was taken to eradicate known infection and keep exposed herds under surveillance.

3. Eradicating cattle fever ticks

(*a*) Department and cooperative employees supervised 1,344,330 inspections or dippings in the United States under this program. In Puerto Rico where the tropical variety of fever tick is prevalent, it was necessary to include sheep and goats as well as cattle in the cattle fever tick eradication program. This required 516,387 inspections or dippings. Total inspections and dippings were 1,860,747 as compared with 4,372,799 for the fiscal year 1953.

(*b*) Dippings and inspections were continued in Florida at auction markets and in areas where recent reinfestations were previously found, but no cattle fever ticks, the only natural carrier of the disease, tick fever, were found. Due to Florida's close proximity to the tick-infested islands and countries of the West Indies with which there is extensive commerce, there is always danger of reinfestation.

(*c*) In Texas, a narrow buffer area on the American side of the border was constantly inspected by experienced Department employees to prevent the introduction and dissemination of tick fever. All territory in Mexico adjacent to the boundary along the lower Rio Grande is tick-infested. A severe drought caused a critical situation along the border. Many sources of water dried, including extended sections of the Rio Grande from Laredo to the gulf. Mexican livestock drifted into Texas in increasing numbers. In addition, in the latter part of the fiscal year a severe flood occurred in this area which washed out many miles of existing fence along the American side of the river. Until the owners repair and rebuild the washed-out sections of fence, the danger that tick-infested animals will stray across from Mexico is greatly increased. The buffer area is being constantly reinfected by Mexican animals. Employees are on the alert to see that those animals that do become infected are contained within the quarantined area. With the opening of the border on December 31, 1954, it may be necessary to increase the force of regular tick inspectors in this area.

4. Diagnosis, control, and eradication of miscellaneous diseases

(*a*) In the Corn Belt area new modified live hog cholera virus vaccines are now being put into wide use. They are still on a field-trial basis and require close observation. Close watch is still being maintained to detect any reappearance of the variant hog cholera virus.

(*b*) *Swine erysipelas vaccinations.*—Federal employees cooperated with State officials, swine growers, and others in the vaccination of swine against this disease. Some 63,917 herds and 4,545,462 swine received the first injection of the serum-culture immunization and 384 herds and 21,541 swine also received second injections of this product.

(*c*) *Blue tongue of sheep* is becoming an increasingly serious problem in this country. The disease has been reported in Arizona, California, Colorado, New Mexico, Texas, and Utah, and probably has been present in other areas. The Department has cooperated with State officials, sheep owners, and others in the diagnosis of the disease and with biological houses in the production, testing, and field use of a vaccine for the prevention of blue tongue. This vaccine is now avail-

able and is presently being used in the field. During the summer and fall of 1954, blue tongue of sheep was reported in Arizona, California, Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, Texas, and Utah. In order to augment existing diagnostic facilities, limited for the most part to California, the Department has established a diagnostic laboratory in Denver, Colo., for this purpose.

(*d*) *Scrapie of sheep.*—Scrapie, a chronic neurosis of sheep, has been diagnosed in the States of California, Connecticut, Illinois, Michigan, New York, Ohio, Oregon, and Indiana. Eradication of this disease by destruction of infected and exposed animals and by inspecting flocks which have been associated with these animals is being carried out. Approximately 700 flocks in 39 States are under surveillance due to their association with scrapie-infected or exposed sheep. Meetings with research workers, sanitary officials, and members of the industry were held to further develop the eradication program, and information pertaining to the disease was gathered from available sources and disseminated to employees and members of the industry.

Eradication of scrapie in sheep: In 1954 scrapie was diagnosed on an additional premise in Ohio, on 2 premises in New York, and on 1 premise each in the States of Connecticut, Oregon, and Indiana.

All flocks known to have been infected with scrapie have been eradicated. Inspection on over 700 flocks associated with the diseased or exposed animals have failed to disclose further spread of the disease. The Secretary, therefore, on December 17, 1954, declared the emergency, arising out of the finding of the outbreak of this disease, at an end. Existing regulations have been amended to allow payment of Federal indemnity for scrapie infection without participation in such payments by the States. Federal payments are now made from regularly appropriated rather than emergency funds. Indemnities for the 1954 fiscal year amounted to $3,943.

(*e*) *Dourine and glanders of horses.*—Eight cases of dourine were found, largely on the Papago Indian Reservation in southern Arizona in 1,981 samples of equine sera submitted from that State. The work on the Indian reservation was carried out by specific agreement with the Bureau of Indian Affairs, Department of the Interior, and each agency shared in the cost. Samples submitted from other States were negative to the complement-fixation test for dourine. Three cases of glanders were found in Arizona during the summer and fall of 1954. This disease is very prevalent in adjacent Mexico and will be a constant threat to the United States. Seventy-two dourine reactors were found among equines tested at various ports of entry along the Mexico-United States border. The United States had been free of this disease for a number of years.

(*f*) *Anthrax.*—During the year 233 outbreaks of anthrax were reported in 121 counties in 26 States where 409 cattle, 127 swine, 51 sheep, 10 equines, and 86 mink died of this disease. During the year preventive treatment against anthrax was given to 6,459 Indian-owned cattle on 5 reservations in South Dakota. During the late summer months of 1954, a severe outbreak of anthrax occurred in southern Louisiana and Mississippi, killing 1,000 cattle and 297 horses. Prompt action to assist in bringing the outbreak under control was taken by State and Federal cooperating authorities. Department representatives made a study of the outbreak in cooperation with the States.

(*g*) *Miscellaneous diseases.*—During the late summer of 1954 reports of the disease called "psittacosis" was reported among workers in turkey-slaughtering establishments. Representatives of the Department met with officials of the United States Public Health Service and public health and livestock sanitary officials in several places to make plans and map out procedures for the effective control of these outbreaks. The Department has indicated its willingness to cooperate with any State in making field studies of this disease.

There was a serious outbreak of mucosal disease of cattle in the Midwest States. In cooperation with the States plans have been made for further study of the disease and how it can best be dealt with.

As an adjunct to the service now available for diagnosis of foot-and-mouth disease and other exotic diseases, the Department is making studies to determine the extent of facilities and personnel available for the diagnosis of exotic poultry diseases. Many reports of conditions simulating foot-and-mouth disease were investigated but proved not to be that disease. All cases of animal and poultry diseases suspected as being of foreign origin were promptly investigated to insure prompt detection and appropriate protective measures.

(*h*) ***Leptospirosis***, a serious disease of cattle, swine, and other domestic animals, which is fatal to humans as well as animals, is causing serious concern, especially

in the Northwestern States where it is now most prevalent. The Department has cooperated with State agencies in that area in field studies and in diagnostic activities. The Department is now in the process of establishing, in cooperation with the States, a survey for the purpose of determining the incidence of this disease.

5. Supervision over interstate movement of livestock

(*a*) *Inspection of livestock for communicable diseases at public stockyards.*—Valuable assistance was rendered during the past fiscal year in preventing the spread of vesicular exanthema of swine and in tracing outbreaks to source of origin.

(*b*) *Volume of work* during the fiscal year 1954 is reflected in the following table:

	Fiscal year 1953	Fiscal year 1954
INSPECTION AT PUBLIC STOCKYARDS		
Number of stockyards operating	46	46
Number of cities in which located	44	44
Animals inspected:		
Cattle	23, 417, 701	25, 810, 912
Sheep	13, 643, 449	13, 179, 281
Swine	28, 018, 094	23, 182, 295
Total animals inspected	65, 079, 244	62, 172, 488
Animals dipped and immunized:		
Cattle dipped	499	13, 019
Sheep dipped	364, 675	241, 689
Swine immunized	222, 078	131, 108
Total animals dipped and immunized	587, 252	385, 816
Health certificates issued for shipments	274, 047	221, 006
Infectious cars received	19, 055	1, 295
Cars cleaned and disinfected	22, 570	28, 122
Trucks cleaned and disinfected	16, 683	24, 515
Diseased animals received (includes in fiscal year 1954: 5,215 tuberculosis, 91,915 brucellosis and 48 paratuberculosis reactors)	89, 174	106, 918
3 more stockyards will be placed under Federal inspection during the fiscal year 1955. This will result in a considerable numerical increase in each of the above items. In addition, the rapid expansion of the brucellosis eradication program will increase considerably the number of diseased animals handled through the yards during the fiscal years 1955 and 1956.		
ENFORCEMENT OF ANIMAL QUARANTINE ACTS		
Violations investigated	120	274
Violations referred to the Solicitor of the Department	16	61

An additional 35 reported violations under investigation at the beginning of the year made a total of 309 reports to be handled. Of these, there was insufficient evidence in 192 cases to warrant prosecution and they were filed without action. Fifty-six cases were being investigated at the close of the year. Disposition was made by the courts during this period of 2 cases and fines of $200 and costs were imposed. The strict enforcement of the Federal quarantine imposed because of the existence of vesicular exanthema in certain areas has greatly increased the number of violations reported on illegal interstate movement of animals.

(*c*) *Enforcement of the 28-hour law.*—During the year 251 reports of alleged violations of the 28-hour law were received. An additional 30 reported violations under investigation at the beginning of the year made a total of 281 reports to be handled. One hundred forty-eight cases were recommended to the Solicitor of the Department for prosecution. Of those remaining, 105 cases were filed without action because of circumstances or conditions that were considered as excusing the carrier for its failure to comply with the requirements. At the end of the year 28 cases were under investigation. Reports showed penalties of $12,700 and costs were imposed by the courts on 112 violations.

ANIMAL INSPECTION AND QUARANTINE

(*a*) *Inspection and quarantine of import animals and poultry.*—In accordance with the regulations of the Department, all horses, ruminants, swine, and poultry

offered for importation into the United States were carefully inspected at coastal, air, and border ports of entry.

The Bureau of Customs of the Department of the Treasury and the Public Health Service of the Department of Health, Education, and Welfare continued their valuable assistance in the administration of these import regulations. Public Health Service officials at ocean ports obtained for the Branch, 25,224 declarations from masters of ships certifying to the absence or presence of prohibited animals, or meats therefrom, aboard their vessels.

Animals, including poultry, inspected and passed for entry, fiscal year 1954

Kind of animal	Canadian border ports	Mexican border ports	Ocean ports	Total	Refused entry
Cattle	99,432		285	99,717	523
Swine	12,512		837	13,349	397
Sheep	2,292		542	2,834	5
Goats	21		1,753	1,774	2
Equine	19,014	23,001	539	42,554	416
Poultry	8,325		4,964	13,289	394
Other animals	110		110	220	5
Eggs	100		200	300	
Total	141,806	23,001	9,230	174,037	1,742

(*b*) *Certification of purity of breeding and identity of animals offered for free entry.*—Under the provisions of paragraph 1606 of the Tariff Act of 1930, certificates as to the purity of breeding were issued for 18,993 animals imported during fiscal year 1954. The purebred animals certified for entry free of duty were by classes and breeds, as follows:

Horses	297	Dogs	684
Cattle	16,536	Cats	2
Sheep	905		
Swine	568	Total	18,993
Goats	1		

(*c*) *Sanitary control of imported animal products and forage.*—Sanitary control was maintained over the entry of various animal products, and hay and straw. Products permitted entry under restrictions designed to prevent the introduction into the United States of foot-and-mouth disease, rinderpest, anthrax, or other infectious diseases of animals and poultry were transported from the port of entry under seal to approved destination establishments and there handled under supervision.

The large volume of animal products imported during fiscal year 1954 included 63,748,255 hides and skins, of which 1,550,362 were permitted entry subject to restrictions; over 407 million pounds of wool; and more than 46,500 tons of certified animal casings; and 449,301 pounds of animal casings released after disinfection.

Railroad cars, trucks, and premises involved in the transportation and handling of restricted products were disinfected.

Particular attention was given to preventing the landing of fresh, chilled, or frozen meats, or garbage derived therefrom, or from air and ocean transports, provisioned in countries where foot-and-mouth disease exists. During the year over 28,000 ocean vessels and 49,000 airplanes arrived in foreign commerce. Without constant surveillance, officials in charge of such transports may unload garbage containing bones and scraps of meat originating in countries where foot-and-mouth disease exists.

Unsterilized hay and straw used as packing material from countries where foot-and-mouth disease or rinderpest exists were destroyed.

(*d*) *Inspection of export animals and transporting vessels.*—The law requires that domestic ruminants and swine intended for export be free from disease, and that vessels on which they are to be transported be equipped to insure their safe and humane handling. Animals are inspected and tested in various districts of origin throughout the United States and supervision is given to livestock facilities and other accommodations on ocean vessels and aircraft. In the 1954 fiscal year, a total of 48,205 animals, compared with 40,101 in 1953, were inspected and tested for export as follows:

Kind of animal	Destination			
	Canada	Mexico	Other countries	Total
Cattle	1,367	3,510	8,063	12,940
Swine		262	897	1,159
Sheep	197	21,061	825	22,083
Goats	17	9,740	84	9,841
Equines	47	822	1,313	2,182
Total	1,628	35,395	11,182	48,205

(e) *Control of manufacture, importation, shipment, and marketing of viruses, serums, toxins, etc.*—Outstanding licenses under the Virus-Serum-Toxin Act permitted the production of 113 different biological products as of June 30, 1954. Several products are manufactured in more than one form so that the total number of different biological products was 192. The progress and anticipated extent of the work is reflected in the following table:

	Actual, fiscal year 1954	Estimated, fiscal year 1955	Estimated, fiscal year 1956
Establishments producing anti-hog-cholera serum and hog-cholera virus	30	29	28
Production (cubic centimeters):			
Serum (completed product)	854,413,500	794,605,050	736,929,000
Virus:			
Simultaneous	40,431,625	37,601,400	35,345,000
Hyperimmunizing	164,843,195	153,304,170	144,106,000
Inoculating	749,950	697,455	655,608
Animal inspections	2,321,987	2,159,450	2,030,000
Tests supervised	8,420	7,830	7,361
Establishments producing hog-cholera vaccine	17	17	17
Production (doses)	31,636,155	32,500,000	34,450,000
Establishments producing other biologics	46	48	50
Production:			
Cubic centimeters	564,476,815	592,700,655	622,335,000
Milligrams	193,685,364	203,379,630	213,547,000
Units	384,380,788	392,068,493	401,671,000
Products destroyed (all kinds):			
Cubic centimeters	44,582,013	46,811,110	49,151,000
Milligrams	43,546,704	45,724,000	48,010,000
Units	6,356,600	6,483,752	6,807,000
Export certificates issued	1,020	1,100	1,200

The value of present controls over hog cholera products was clearly demonstrated again in the past year when clinical examination of swine showed evidence of vesicular exanthema.

3,581 samples of biological products and subcultures of organisms were collected and forwarded to Washington laboratories for testing. Included in these were 2,231 samples of *Brucella abortus* vaccine, of which 5.3 percent were found unsatisfactory when examined in these laboratories. These unsatisfactory batches of *Brucella abortus* vaccine were destroyed under Federal supervision and represented 1,704,045 cubic centimeters or enough vaccine to treat 340,809 calves. In the course of 1,186 purity and safety tests on hog-cholera virus, approximately 8.7 percent of the batches tested were suspected of containing the swine-erysipelas organism. When subjected to laboratory examination, approximately 7.6 percent were found to contain the erysipelas organism and the virus was destroyed under the supervision of a Federal inspector.

The following table shows the volume of biological products certified for export:

Products [1]	Fiscal year 1953	Fiscal year 1954	Estimated	
			Fiscal year 1955	Fiscal year 1956
Anti-hog-cholera serum (cubic centimeters)	20,535,000	26,779,000	23,880,000	26,000,000
Other serums	79,000	232,000	239,000	244,000
Hog-cholera virus (cubic centimeters)	829,000	1,005,000	1,025,000	1,000,000
Aggressins	8,000	2,000	1,500	1,000
Antitoxins (units)	5,078,000	6,737,000	7,500,000	8,100,000
Bacterins	3,506,000	4,976,000	5,275,000	5,780,000
Diagnostics	351,000	236,000	240,000	235,000
Vaccines	4,995,000	6,939,000	7,490,000	8,650,000

[1] Doses unless otherwise indicated.

The following table shows comparable figures by fiscal years of the number of handlers operating under the marketing agreement and order:

	Actual		Estimated	
	1953	1954	1955	1956
Producer-handlers	30	28	28	27
Distributor-handlers or equivalent, including wholesale purchasers and handlers	225	203	203	203

Control agency: Following a uniform method for the determination of minimum qualifications for wholesalers, handlers were screened to ascertain whether they were properly classified under the order and numerous changes in classification were initiated. Since the advent of the modified live virus hog-cholera vaccines appears to have affected the orderly marketing of anti-hog-cholera serum and hog-cholera virus, the control agency petitioned the Secretary for a hearing relating to proposed amendments to the marketing agreement and order. This hearing was held in Kansas City, Mo., July 21 and 22, 1954. As a result, a notice was filed recommending that all hog-cholera vaccines be included within the marketing agreement and order. Each handler is being given an opportunity to sign the proposed amendments.

During the year investigations were instituted in the case of three handlers at the request of the control agency. Two of the investigations have been completed and the cases referred to the appropriate agency for disposition. As of May 1, 1954, 13 handlers were found to be in violation of the requirements of the order that each must have available a supply of serum equivalent to 40 percent of his previous year's sales. These cases have been referred to the Office of Solicitor for appropriate action.

Dr. VAN HOUWELING. I would like to point out that the increased efficiency that has been accomplished is due to the reduction of losses from some of these diseases. The eradication programs are ones that bear adequate testimony to that.

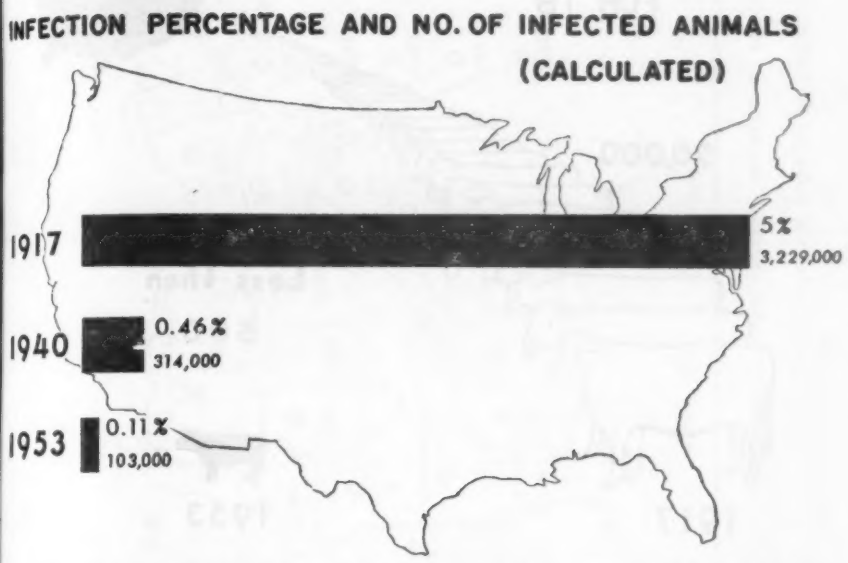
REDUCTION IN INCIDENCE OF TUBERCULOSIS IN CATTLE

We have had a tremendous reduction in the incidence of tuberculosis among cattle since 1917. We have prepared some charts that I would be glad to distribute. I think they would facilitate the discussion.

If we might refer to the first chart, which depicts the incidence of tuberculosis in cattle, you will see that it shows three stages during this eradication program.

(The chart referred to is as follows:)

TUBERCULOSIS OF CATTLE



Dr. VAN HOUWELING. In 1917, when the program was begun, it was a limited program but it did serve to give some indication of the incidence of the disease at that time. Based on a cattle population of about 60 million animals, chart 1 shows how many infected animals we had in the United States. There were about 3 million diseased animals. In 1940 we reached the stage that all of the States became accredited TB areas and the incidence had been reduced to less than one half of 1 percent. The cattle population had increased to 67 million however. But even with the great reduction in incidence we probably had over 300,000 infected animals.

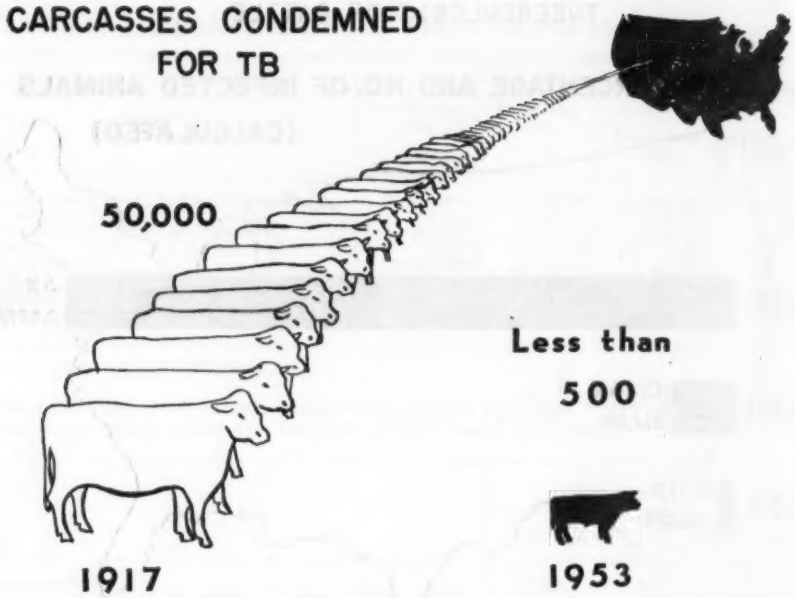
Moving to 1953 when the incidence had been reduced to 0.11 of 1 percent, and based on a cattle-production population of approximately 90 million, you can see that we estimate that there are still approximately 100,000 infected cattle in the United States.

This is to point out that this job has not been completed although many others have referred to TB as having been eradicated.

CARCASSES CONDEMNED FOR TB

The next chart, No. 2, gives some evidence of the savings that are accomplished through programs such as for TB eradication carried on cooperatively with the States.

(The chart referred to is as follows:)



Dr. VAN HOUWELING. Chart 2 projects graphically the number of carcasses that were condemned by Federal meat inspectors in 1917 because they were infected with TB and the number of carcasses that were condemned for the same reason in 1953. You see that the figure was approximately 50,000 in 1917 and by 1953 had been reduced to less than 500, actually.

With the cattle population of 1953, and if the rate of condemnation had been the same as it was in 1917, which is logical to assume, because the disease would not have decreased unless we had had an active eradication program, we are able to make an accurate calculation of the reduction in loss that has been brought about. The value of the carcasses that were not condemned but that would have been condemned if the incidence of the disease had stayed the same is about $150 million. The total cost of the TB program over the years has been approximately $300 million. So in 2 years the saving from this source alone repays the States and Federal Government, and the producers, for the expenditures that have been made to eradicate tuberculosis in cattle.

There are many other savings that result from the reduced incidence such as increased milk and meat production. You also know how the disease in humans has decreased.

For the third year the incidence as revealed by our testing has remained constant, 0.11 of 1 percent. During fiscal 1954 we made about 10 million tests.

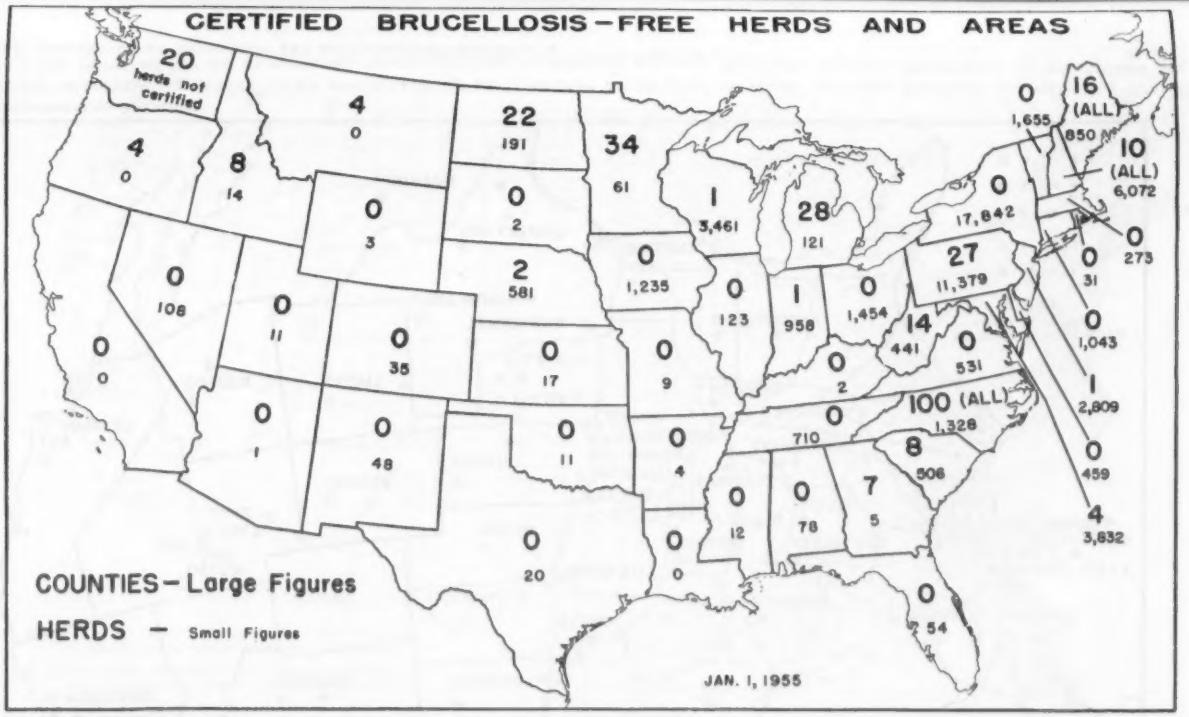
I would be glad to answer any questions.

DESCRIPTIVE CHARTS

Mr. WHITTEN. I think that covers the matter. I am going to suggest that we put into the record several of these other charts that you have.

(The charts referred to follow:)

CERTIFIED BRUCELLOSIS-FREE HERDS AND AREAS



U.S. DEPARTMENT OF AGRICULTURE

A certified Brucellosis-Free herd is one in which all cattle (except steers, spayed heifers, and official vaccinates 24 months old or less) have passed 3 consecutive, negative brucellosis tests.

A modified Certified Brucellosis-Free Area is one in which all cattle have been tested and Brucella infection disclosed is not more than 1 percent of the cattle population and 5 percent of the herds.

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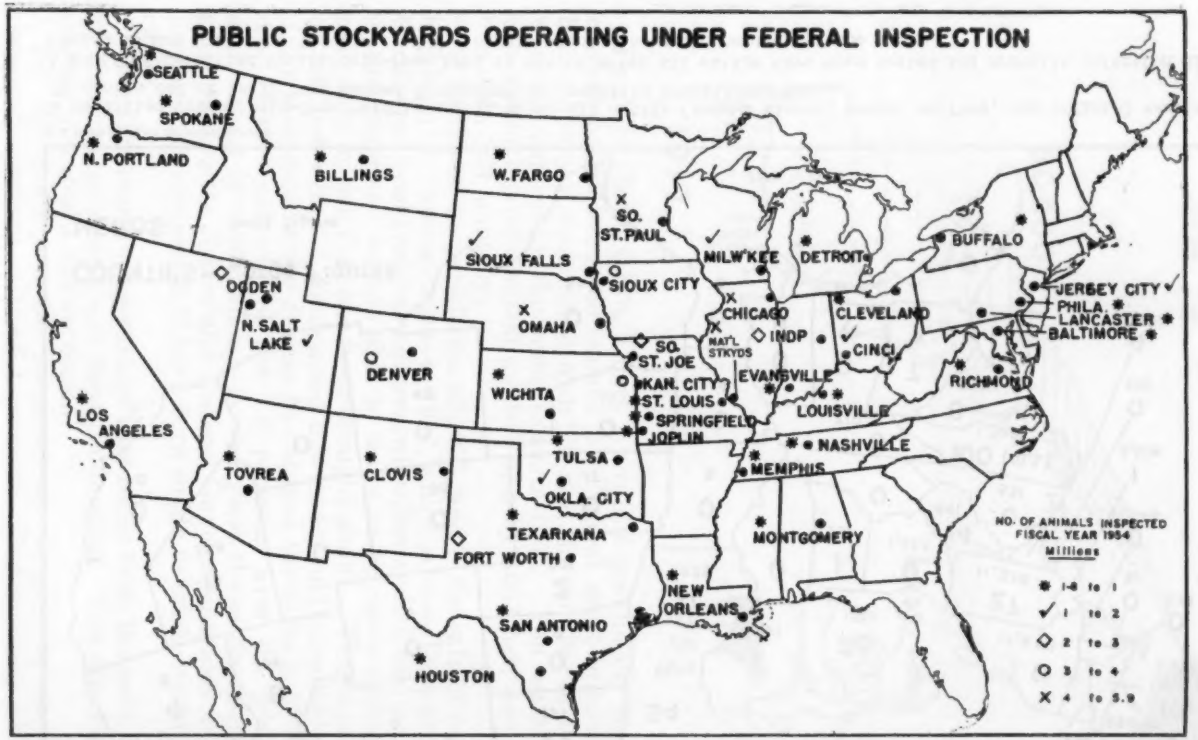

U.S. DEPARTMENT OF AGRICULTURE

Public stockyards are stockyards where trading in livestock is carried on where yarding, feeding, and watering facilities are provided by the stockyards, transportation or similar company and where Federal inspection is maintained for the inspection of livestock for communicable diseases .

LOCATIONS WHERE IMPORT – EXPORT INSPECTION, CERTIFICATION AND QUARANTINE SERVICES ARE PERFORMED BY THE ANIMAL

PORTS

LOCATIONS WHERE IMPORT – EXPORT INSPECTION, CERTIFICATION AND QUARANTINE SERVICES ARE PERFORMED BY THE ANIMAL INSPECTION AND QUARANTINE BRANCH

● Ocean, Air and International Boundry Ports where inspection, certification, and/or quarantine services are furnished.

▶ States in which establishments approved for receipt and handling of restricted animal by-products and meats are located.

42 Field Stations and Sub-stations

93 Port locations serviced

315 Approved establishments under supervision

31 Veterinary Inspectors

70 Lay-Inspectors

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Agricultural Research Service
1-66

Mr. WHITTEN. Are there any questions on any of these charts? We have put most of them in the record.

BRUCELLOSIS IN THE STATE OF WASHINGTON

Mr. HORAN. I think they are excellent charts. They show a fine progress report. We ought to have some explanation of what they mean. I notice in the State of Washington that there are 20 counties under the brucellosis program, and then you say "Herds are not certified in the State of Washington."

Dr. VAN HOUWELING. There are 20 counties in the State of Washington which have reached the certified status which means the level of disease has been reduced to less than 1 percent among cattle in those counties. There is active work going on in other counties in the State of Washington but they have not reduced the level to where they are completely certified. They do not carry on an individual herd-certification plan. They are working on a county-area basis and trying to reduce the level of the disease low enough in the counties to certify a county at a time. Excellent progress is being made in Washington. They hope to have the entire State certified in a year or two.

Mr. HORAN. We are very happy with the work of our Director of Agriculture who has been Mr. Peterson's associate for so many years. I know he is trying to do everything in his power to give us sound agriculture in our State.

Mr. PETERSON. We are getting good cooperation from the States in this area.

DECREASE IN HOG CHOLERA CONTROL PROGRAM

Mr. WHITTEN. Are there any further questions along that line? There is one decrease here in hog-cholera control. In view of the committee's interest in this in times past, I would like to have that discussed. What is the estimated loss per year from hog cholera?

Dr. VAN HOUWELING. There are many figures given from time to time. I am afraid that the estimates have not been too accurate. The annual loss from hog cholera is probably 20 to 40 million dollars a year.

Mr. WHITTEN. Is that reduction in the control program a decrease by the Budget Bureau or does it represent the recommendations of the Department?

Dr. CLARKSON. Recommended by the Department.

Mr. WHITTEN. What is the basis for that recommendation?

Dr. VAN HOUWELING. As you perhaps know, there has been a decided shift in the immunization practices for hog cholera in recent years. The shift has been away from the double treatment of hog-cholera serum and virus to modified vaccines. With that shift there has been a reduction in the number of problems with which producers are confronted. This recommendation is to eliminate some of the consultative work that has been done in certain States, particularly in the Midwest, where there are the most hogs. This is consultation work we have done with the producers and practicing veterinarians on hog-cholera problems.

Mr. WHITTEN. Are there further questions?

JUSTIFICATION DATA ON MEAT INSPECTION

We will include in the record pages 111 to 118 of the justification covering the discussion of meat inspection.
(The pages referred to follow:)

MEAT INSPECTION

Current activities: Federal meat inspection assures clean and wholesome meat for human consumption. The work consists of inspection of animals and of carcasses at the time of slaughter; inspection at all stages of preparation of meat and meat-food products to assure sanitary handling; destruction of condemned product to prevent its use for human food; enforcement of measures that insure informative labeling; inspection of meat and meat-food products offered for importation; and a system of certification to assure acceptance of domestic meats in foreign trade. Meat and meat-food products are examined for compliance with specifications of governmental purchasing agencies for which reimbursements are received. Reimbursements are also received from meatpacking establishments for the cost of overtime work performed at their request. Continuous inspection of the manufacture of processed butter is also provided under this activity.

SELECTED EXAMPLES OF RECENT PROGRESS

1. The scope of operations under the meat-inspection laws is indicated by the following tables:

Meat inspection activities

	At close of fiscal years				
	1952	1953	1954	Estimated 1955	Estimated 1956
Number of establishments covered	965	991	1,067	1,103	1,127
Number of cities and towns in which establishments were located	381	390	410	425	440
	Fiscal year				
Antemortem inspection:					
Animals passed	92,460,187	92,365,921	90,733,945	92,944,000	93,999,000
Animals suspected	286,615	224,962	188,806	190,000	190,000
Animals condemned	9,448	7,810	6,181	6,000	6,000
Total animals inspected	92,756,250	92,598,693	90,928,932	93,140,000	94,195,000
Postmortem inspection:					
Carcasses passed	92,361,681	92,302,113	90,640,616	92,854,000	93,909,000
Carcasses condemned	383,287	288,624	281,974	280,000	280,000
Total carcasses inspected	92,744,968	92,590,737	90,922,590	93,134,000	94,189,000
Inspection of animals by species:					
Antemortem inspection (animals):					
Cattle	12,183,042	15,208,023	18,479,229	18,600,000	18,500,000
Calves	4,808,303	6,027,449	7,480,146	7,540,000	7,500,000
Sheep and lambs	11,219,553	13,623,394	14,368,902	13,700,000	13,400,000
Goats	28,868	22,803	53,094	70,000	70,000
Horses [1]	322,083	321,545	250,295	230,000	225,000
Swine	64,194,401	57,395,479	50,297,266	53,000,000	54,500,000
Total	92,756,250	92,598,693	90,928,932	93,140,000	94,195,000
Postmortem inspections (carcasses):					
Cattle	12,179,375	15,204,998	18,475,936	18,597,000	18,497,000
Calves	4,807,524	6,026,786	7,479,329	7,539,200	7,499,200
Sheep and lambs	11,218,394	13,622,745	14,368,314	13,699,500	13,399,500
Goats	28,863	22,803	53,093	69,997	69,997
Horses [1]	322,064	321,519	250,282	229,985	224,985
Swine	64,188,748	57,391,886	50,295,636	52,998,318	54,498,318
Total	92,744,968	92,590,737	90,922,590	93,134,000	94,189,000

[1] Horses are slaughtered and their meat is identified as such. It is handled and prepared in separate establishments from those handling cattle, calves, sheep, swine, and goats.

Meat and meat-food products prepared and processed under Federal inspection by fiscal years

Fiscal year:	Pounds	Fiscal year—Con.	Pounds
1952	16, 682, 367, 940	1954	14, 833, 471, 22
1953	15, 976, 408, 330	1955 (estimated)	16, 000, 000, 00

Meat and meat food products classified by type of product

[In pounds]

	Fiscal year 1952	Fiscal year 1953	Fiscal year 195
Placed in cure:			
Beef	111, 782, 159	119, 620, 712	136, 094, 80
Pork	3, 691, 167, 274	3, 505, 135, 890	3, 093, 765, 85
Other	1, 651, 813	1, 461, 761	2, 203, 59
Smoked and/or dried:			
Beef	59, 039, 444	49, 781, 137	56, 013, 13
Pork	2, 478, 528, 992	2, 427, 698, 106	2, 139, 975, 92
Cooked meat:			
Beef	59, 584, 879	66, 642, 332	66, 032, 53
Pork	426, 662, 363	315, 865, 497	263, 174, 99
Other	2, 533, 295	3, 517, 822	3, 091, 66
Sausage:			
Fresh finished	219, 410, 677	212, 385, 044	201, 932, 92
To be dried or semidried	113, 810, 026	126, 065, 241	126, 633, 40
Frankfurters, weiners	508, 459, 941	541, 517, 541	555, 346, 19
Other	563, 155, 848	616, 045, 275	615, 002, 76
Loaf, headcheese, chili con carne, jellied products, etc	192, 054, 839	198, 602, 990	196, 715, 88
Steaks, chops, roasts	938, 097, 090	659, 777, 173	633, 492, 26
Bouillon cube extract	3, 330, 752	3, 419, 120	3, 152, 77
Bacon, sliced	801, 985, 640	792, 788, 643	713, 408, 00
Sliced, other	35. 914, 675	61, 042, 926	88, 967, 89
Hamburger	136, 317, 238	132, 593, 483	188, 859, 29
Miscellaneous meat products	40, 233, 744	30, 201, 281	39, 592, 57
Lard:			
Rendered	2, 201, 896, 997	1, 914, 783, 487	1, 589, 966, 13
Refined	1, 582, 503, 639	1, 400, 872, 257	1, 250, 946, 22
Oleo stock	89, 383, 330	113, 398, 738	112, 922, 27
Edible tallow	67, 574, 315	89, 914, 906	138, 296, 14
Rendered pork fat:			
Rendered	110, 938, 640	102, 169, 035	89, 873, 30
Refined	59, 776, 070	68, 749, 703	55, 355, 29
Compound containing animal fat	283, 739, 747	334, 887, 149	398, 489, 12
Oleomargarine containing animal fat	20, 250, 351	30, 058, 009	31, 260, 20
Canned products	1, 812, 966, 224	1, 986, 742, 487	1, 988, 303, 14
Horse meat products:			
Cured	5, 573, 313	6, 918, 747	6, 419, 02
Chopped	45, 273, 161	42, 484, 934	26, 658, 66
Edible oil	4, 192, 173	3, 220, 804	2, 370, 05
Canned horse meat	14, 579, 291	18, 046, 100	19, 155, 37
Total	16, 682, 367, 940	15, 976, 408, 330	14, 833, 471, 22

Examination of meat and meat food products for other Government agencies (reimbursable)

[In pounds]

	Fiscal year 1952	Fiscal year 1953	Fiscal year 1954	Estimated, fiscal year 1955
Branch of Government:				
Department of the Army				264,000,000
Department of the Navy	393,494,290	396,939,206	352,849,957	330,000,000
Commodity Credit Corporation (supply programs)			76,426	8,000,000
Coast Guard	251,740	254,493	79,361	80,000
Marine Corps	141,216	164,224	92,578	90,000
Department of Interior	36,257			
Veterans Administration	3,660,921	3,844,338	2,764,098	5,400,000
Department of the Army (Engineers)	59,667			
Maritime Commission	1,281			
Department of Justice	96,724	59,648	52,964	60,000
Department of Commerce	66,390	43,834	27,640	25,000
Federal Security Agency	15,909	36,717	41,684	50,000
All others		992,413		
Total	[1] 397,824,395	[2] 402,334,873	[3] 355,684,708	607,705,000

[1] Includes 4,137,569 pounds rejected.
[2] Includes 6,123,560 pounds rejected.
[3] Includes 6,163,807 pounds rejected.

Summary of samples examined in laboratories for determination of adulteration or other objectionable conditions, fiscal year 1954

	Number examined	Reported adversely
Meat and meat food products	8,189	1,223
Edible fats and oils	388	22
Binders (cereal, dried skim milk, soya flour)	639	14
Seasonings (spices, flavorings)	3,253	58
Curing materials	1,040	35
Miscellaneous	4,478	124
Samples of animal foods	101	15
Imports	1,867	86
Total	19,955	1,577

Examination of labels and sketches, fiscal year 1954

Number of labels and sketches approved	31,340
Number of labels approved for imported meat	1,000
Number of labels and sketches refused approval	2,158
Total number of labels and sketches reviewed	34,498

Inspection of imported meat and meat food products

Fiscal year:	*Pounds*	Fiscal year—Continued	*Pounds*
1952	339,589,208	1954	334,326,990
1953	367,945,231	1955 (estimated)	301,000,000

2. During the past year veterinary meat inspectors obtained laboratory confirmation on 1,156 specimens of diseased tissue in connection with examinations and diagnoses made by them at federally-inspected establishments. The laboratory work on these specimens involved histopathological studies and frequently bacteriological studies and animal inoculation tests. A wide variety of pathological conditions were diagnosed in this way. Bacteriological tests of food products for spoilage and food poisoning organisms also were made.

3. In a continuation of experiments with a special precipitin test designed to detect infection with trichinae in pork, it was determined that the accuracy of the test varied with the degree of infection. When the number of larvae per unit of muscle tissue was low, as is the case in most farm-fed hogs that harbor these

parasites, the reaction was so slight at the times as to be considered doubtful. Under these circumstances, it was concluded that approximately 20 percent of the infections which would likely be encountered in this group of swine fall into the doubtful category, thus invalidating the practical usefulness of the test.

4. A study of country brand hams to determine whether the rather prolonged curing process will destroy all viable trichinae was completed during the year. A total of 8 products made from trichina-infected pork, in 3 distinct tests carried out at different times, was involved. The curing procedures were carried out in two commercial packinghouses where such hams are processed for trade. The finished products were examined by special techniques which bring to light, living and dead trichinae, and by feeding copious quantities of the meat to rats—animals highly susceptible to trichinosis. The results showed conclusively that the curing of country brand hams under Federal supervision destroyed all live trichinae, thus rendering them safe for human consumption.

5. To determine whether the current practices of cooking garbage before feeding it to hogs reduces the risk to the consumer of acquiring trichinae from garbage-fed hogs, over 1,200 diaphragms obtained from such hogs were examined by the laborious procedure of digestion. Although nearly 10 percent of the samples so examined contained trichinae, the number of worms found in individual samples was appreciably lower than those discovered before cooking of garbage was instituted to prevent the spread of vesicular exanthema. Over 80 percent of the trichina-infected diaphragms examined contained less than 1 larva per gram, and only somewhat less than 2 percent of the samples contained more than 100 larvae per gram. This study is being continued for the reason that some or perhaps nearly all of the samples examined during the year were taken from hogs which were fed uncooked garbage during part of the time that they were in the feed lots.

6. Experiments were conducted to determine whether the muscle parasites known as *Sarcocystis* or Miescher's sacs are in any way injurious to health. These parasites occur in the flesh of practically all food animals but are not discovered in all cases on account of their small size and because they do not always stand out in sharp contrast to the flesh in which they are imbedded. There is published evidence that *Sarcocystis* contains a substance which is toxic when injected into the body of small mammals. To ascertain whether these parasites also are injurious when swallowed with meat, over 30 mice were fed on the flesh of other mice that were heavily infected with these parasites. No ill effects were noted as a result of this feeding. It is planned to continue these tests by feeding trials with flesh of hogs, sheep, and other animals harboring *Sarcocystis* in their muscles.

7. Process Butter Act: The scope of operations under the Process Butter Act is indicated by the following (fiscal year 1954):

	Pounds
Packing stock butter:	
Received	1,189,939
Condemned	13,973
Process or renovated butter produced (under Federal inspection)	964,647

Language Changes and Cost of Aircraft

Mr. Whitten. We would like to have the language explained for the record. We would also like to have an explanation of the need for aircraft included in the record.

Dr. Clarkson. Yes, sir.

(The information requested is as follows:)

Changes in Language

The estimates include proposed changes in the language of this item as follows (new language in *italics*; deleted matter enclosed in brackets):

"For expenses necessary to perform agricultural research relating to production and utilization, to control and eradicate [insect] pests and plant and animal diseases, and to perform related inspection, quarantine and regulatory work, and meat inspection: * * * *Provided further, That appropriations hereunder shall be available for uniforms, or allowances therefor, as authorized by the Act of September 1, 1954 (68 Stat. 1114):*

"Research: For research and demonstrations on the production and utilization of agricultural products, and related research and services, including

administration of payments to State Agricultural Experiment Stations; [$35,353,000, of which not to exceed $20,000 shall be available for the construction of an office and a laboratory building at the Southeastern Tidewater Field Station, Fleming, Georgia, and of which not to exceed $28,000 shall be available for the construction or acquisition of the necessary lands and buildings for a pecan research laboratory at Albany, Georgia, and of which not to exceed $100,000 shall be available for the construction of a cotton ginning laboratory in the Southeast, including acquisition of necessary land] *$37,684,000.*

"Plant and animal disease and pest control: For operations and measures to control and eradicate [insect] pests and plant and animal diseases and for carrying out assigned inspection, quarantine and regulatory activities, as authorized by law; [$17,689,579] *$17,254,000,* of which $400,000 shall be apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects and plant diseases under the joint resolution approved May 9, 1938 (7 U. S. C. 148–148e), *and the Act of August 13, 1954 (Public Law 586),* to the extent necessary to meet emergency conditions: Provided further, That no part of this appropriation shall be used to pay the cost or value of trees, farm animals, farm crops, or other property injured or destroyed as a result of plant insect and disease control activities except potatoes and tomatoes as authorized under the Golden Nematode Act: * * *

"Meat inspection: For carrying out the provisions of laws relating to Federal inspection of meat and meat-food products *and the applicable provisions of the laws relating to process or renovated butter; $14,325,000.*"

The first and fourth changes in language delete the word "insect" for the sole purpose of making clear that the language covers control work on noxious weeds, as well as on insect pests. This change would not affect in any way the nature and scope of work performed.

The second change proposes to insert language authorizing the use of these appropriations for the payment of uniform allowances pursuant to title IV of Public Law 763, approved September 1, 1954. Plant quarantine inspectors have been required by regulation to wear uniforms for a number of years. It is proposed to pay a uniform allowance for the 310 positions affected by the law.

The third change in language deletes a nonrecurring provision in the 1955 appropriation act to construct or acquire three field laboratories. It is contemplated that these laboratories will be constructed in 1955, and therefore, this provision will not be necessary in 1956.

The fifth change proposes to insert reference to Public Law 586, approved August 13, 1954, which provides authority for carrying out in Canada and Mexico, in cooperation with such countries, those emergency insect and plant disease control activities under the joint resolution of May 9, 1938, which are necessary to protect the agriculture of the United States.

The sixth change proposes to insert new language in order to include provision for the activities now conducted under the subappropriation "Plant and animal disease and pest control" in administering the applicable provisions of the act of May 9, 1902 (26 U. S. C. 2325, 2326 (c)), relating to process or renovated butter, as amended, and the act of May 23, 1908 (21 U. S. C. 94 (a)), insofar as it relates to the exportation of process or renovated butter. It is proposed to carry on such activities in 1956 under the subappropriation "Meat inspection."

AIRCRAFT

Authority is requested for the emergency replacement only of one aircraft used by technicians in investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops. Planes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. The replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

Mr. ANDERSEN. I would like to say that I think this is a good set of charts that have been furnished to us on the progress of these animal diseases. I hope we have more of this nature from year to year.

Mr. WHITTEN. I agree. I think it is something we can always use. There are not many things you cannot get relief on, if your problems

are understood. It is always a problem to sell the Congress on the needs. These charts greatly help in making clear what your problem is, both as to the area where you need to get rid of something and the area that would be in trouble if you did not solve the problem.

Mr. HORAN. Mr. Hoyt, on the general efficiency of quarantines some of them are successful and some of them are not; is not that true?

Mr. HOYT. Yes, Congressman. I think that is a proper way to put it. You are talking about the domestic quarantines, I take it, such as we have on account of the Japanese beetle?

Mr. HORAN. Yes. I would like to discuss this in more detail later on, Mr. Hoyt, if we have the time.

Mr. HOYT. I would be glad to.

(Discussion off the record.)

Mr. WHITTEN. We will adjourn until tomorrow.

FRIDAY, FEBRUARY 11, 1955.

FOOT AND MOUTH AND OTHER CONTAGIOUS DISEASES OF ANIMALS AND POULTRY

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate		$1,900,000	$1,900,000
Reappropriation of prior year balance	$652,207	1,212,252	
Unobligated balance transferred, pursuant to 67 Stat. 223 and Public Law 437, from—			
"Agricultural conservation program, Agriculture"	2,172,134	1,197,481	
"Grants, farm housing, Farmers' Home Administration, Department of Agriculture"	122,252	500	
Reimbursements from Commodity Credit Corporation—loans	5,650,000		
Total available for obligation	8,596,593	4,310,233	1,900,000
Balance reappropriated for subsequent year	−1,212,252		
Obligations incurred	7,384,341	4,310,233	1,900,000

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
1. Eradication activities:			
(a) Eradication of foot-and-mouth disease	$5,782,417	$160,233	
(b) Eradication of vesicular exanthema of swine	1,597,981	2,250,000	
(c) Eradication of scrapie of sheep	3,943		
2. Research		1,900,000	$1,900,000
Obligations incurred	7,384,341	4,310,233	1,900,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Total number of permanent positions	600	901	239
Full-time equivalent of all other positions	1	1	1
Average number of all employees	447	525	228
Number of employees at end of year	490	567	240
Average salaries and grades:			
General schedule grades:			
Average salary	$4,361	$4,162	$4,013
Average grade	GS–6.9	GS–6.2	GS–5.2
Salaries established by the act of Apr. 24, 1948 (21 U. S. C. 113a): Average salary	----------	$15,000	$15,000
Ungraded positions: Average salary	$3,410	$3,397	$3,376
11 Personal services:			
Permanent positions	$1,873,992	$2,063,571	$882,500
Positions other than permanent	1,396	3,000	1,500
Regular pay in excess of 52-week base	8,240	8,600	3,600
Payment above basic rates	202,287	75,500	51,700
Total personal services	2,085,915	2,150,671	939,300
22 Travel	451,978	300,000	20,000
23 Transportation of things	47,017	59,800	57,500
24 Communication services	13,169	24,700	14,500
25 Rents and utility services	1,783	41,600	41,000
26 Printing and reproduction	3,257	5,300	300
27 Other contractual services	123,939	235,900	125,800
Services performed by other agencies	353,687	424,100	102,200
28 Supplies and materials	79,826	588,362	575,100
29 Equipment	417,067	145,400	20,000
43 Refunds, awards, and indemnities:			
Payments to Mexican-United States Commission for the eradication and prevention of foot-and-mouth disease	3,520,236	70,000	----------
Vesicular exanthema	255,089	250,000	----------
Scrapie of sheep	3,943	----------	----------
Federal tort claims	229	----------	----------
44 Taxes and assessments	27,206	22,800	12,700
Subtotal	7,384,341	4,318,633	1,908,400
Deduct charges for quarters and subsistence	----------	8,400	8,400
Obligations incurred	7,384,341	4,310,233	1,900,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$1,124,185	$425,545	$485,778
Obligations incurred during the year	7,384,341	4,310,233	1,900,000
	8,508,526	4,735,778	2,385,778
Adjustment in obligations of prior years	−168,504	----------	----------
Reimbursements from Commodity Credit Corporation	−5,650,000	----------	----------
Obligated balance carried forward	−425,545	−485,778	−185,778
Total expenditures	2,264,477	4,250,000	2,200,000
Expenditures are distributed as follows:			
Out of current authorizations	2,087,451	3,850,000	1,750,000
Out of prior authorizations	177,026	400,000	450,000

BUDGET JUSTIFICATION DATA

Mr. WHITTEN. Coming now to foot-and-mouth disease and other contagious diseases of animals and poultry, I would like to have inserted in the record at this point pages 136 to 138 of the justifications.

(The pages referred to follow:)

Foot-and-mouth and other contagious diseases of animals and poultry, Agricultural Research Service

	Eradication activities		Research
	Foot-and-mouth disease	Vesicular exanthema of swine	
Appropriation act, 1955, and base for 1956	(1)	(1)	$1,900,000
Budget estimate, 1956	(2)	(1)	1,900,000

[1] Eradication activities financed by transfers as authorized in the annual appropriation act.
[2] An appropriation estimate for 1956 in the amount of $5,788,897 to cover unreimbursed expenses and transfers from Commodity Credit Corporation through June 30, 1954, including interest through June 30, 1955, is proposed under the item "Repayment to Commodity Credit Corporation for eradication of foot-and-mouth and other contagious diseases of animals and poultry." This item is explained later in these notes under "Special activities."

NOTE.—It is not anticipated that any transfers will be required in 1956 unless an emergency should arise.

ERADICATION ACTIVITIES

A. Eradication of foot-and-mouth disease

Estimated obligations, 1955 (for which funds will be required in fiscal year 1957 to reimburse Commodity Credit Corporation)

1. Cooperation with the Government of Mexico in the eradication of foot-and-mouth disease:	
Payments to Joint Commission	$320,000
Direct Federal expenses	775,000
2. Mexican border inspection and quarantine	450,000
3. Interest	28,233
Total obligations	[1] 1,573,233
Less 1954 balance available in 1955	−160,233
Total estimate 1955	1,413,000

[1] In addition, $330,000 is being used in the program for inspection activities along the Mexican border and in Mexico from the appropriation, "Salaries and expenses, Agricultural Research Service, plant and animal disease and pest control," for which no reimbursement is required.

On December 31, 1954, Mexico was declared to be free of foot-and-mouth disease. Therefore, during the month of January 1955, the American and Mexican sections of the Mexico-United States Commission for the Prevention of Foot-and-Mouth Disease were greatly reduced and the border patrol force was discontinued. During the remaining 5 months of the fiscal year teams of veterinarians and laymen will continue to operate in Mexico in the former quarantined area, but principally the area of the latest outbreak, and at slaughter houses to carry on a program of vigilance and orientation among cattlemen. This would insure that in an emergency immediate steps could be taken to eradicate a new outbreak of foot-and-mouth disease if it should occur. A meeting of the Joint Commission is scheduled for June 1955 to determine the extent to which activities will be required in the fiscal year 1956. It is not anticipated that funds will be required to be transferred from the Commodity Credit Corporation for this activity in fiscal year 1956 unless an emergency should again arise.

B. Eradication of vesicular exanthema of swine

For 1955, transfers for the vesicular exanthema program have been made as follows:

Agricultural conservation program; part of unobligated balance of special appropriation for restoration of farm lands damaged by floods	$1,197,481
Grants, farm housing, Farmers' Home Administration	500
Unobligated balance of transfers for this program in 1954	1,052,019
Total	2,250,000

It is estimated that $2 million of this amount will be used for operating expenses and $250,000 for indemnities.

No reduction is anticipated during the current year in the present level of the program. This level is required to properly enforce interstate regulations to prevent the spread of the disease, for control of movement of garbage-fed hogs, and for adequate premise inspection.

No change in program costs can be predicted at this time for fiscal year 1956. However, it is anticipated that the costs will not exceed $2,250,000. While the general situation with respect to vesicular exanthema has improved, a considerable number of outbreaks of the disease are still occurring along the eastern seaboard in major garbage feeding areas. In addition, there have been a number of outbreaks recently on farms in South Carolina, traceable to hogs passing through a single auction market. To provide for the cost of the program in 1956, it is proposed to transfer funds from other appropriations or funds of the Department, including, if necessary, the transfer of funds from the Commodity Credit Corporation. This would require an appropriation in 1957 to reimburse the Corporation.

C. Eradication of scrapie in sheep

An emergency was declared by the Secretary of Agriculture in connection with an outbreak of scrapie in sheep in California on October 31, 1952. In order to provide funds for payment of indemnities necessary for the eradication of this disease, $20,000 was transferred to this appropriation from "Salaries and expenses, Bureau of Animal Industry."

This destructive virus disease was also diagnosed in Connecticut, Illinois, Indiana, Michigan, New York, Ohio, and Oregon. All known infected flocks have been destroyed as of December 17, 1954, at which time the emergency was terminated. However, since that time two minor outbreaks have occurred and arrangements have been made for disposal of animals. About 800 flocks continue to be under surveillance as the result of possible exposure during the outbreaks of this disease. Since July 1, 1954, eradication activities have been financed under "Salaries and expenses, Agricultural Research Service, plant and animal disease and pest control." These funds are considered to be adequate to cover expenses of inspections and minor outbreaks of the disease.

Summary of eradication costs

	Actual, 1954	Estimated, 1955	Estimated, 1956
1. Eradication of foot-and-mouth disease:			
(a) Cooperation with Government of Mexico in control, eradication, and prevention of foot-and-mouth disease	$4,864,755	$1,095,000	
(b) Mexican border inspection and quarantine	917,662	450,000	
Subtotal	5,782,417	[1] 1,545,000	
2. Eradication of vesicular exanthema of swine	1,597,981	2,250,000	$2,250,000
3. Eradication of scrapie of sheep	3,943		
Total	7,384,341	3,795,000	2,250,000

[1] Excludes estimated interest costs of $28,233.

ERADICATION OF FOOT-AND-MOUTH DISEASE IN MEXICO

Mr. WHITTEN. You might give us a report on foot-and-mouth disease in Mexico, the present situation, the number of people there, and a statement as to what money we have spent during our efforts there.

Dr. CLARKSON. The disease recurred in May 1953, as the committee will remember. It spread over a relatively small area in the State of Vera Cruz in the central part of Mexico. That was in an area that was included in the larger area of the former outbreak that lasted from 1946 until 1952.

Mr. ANDERSEN. Until what time in 1952?

Dr. CLARKSON. September 1, 1952.

Mr. ANDERSEN. It broke out again then in May of '53?

Dr. CLARKSON. May 21, 1953.

Mr. ANDERSEN. Have you ever come to a conclusion as to what was responsible for the new outbreak?

Dr. CLARKSON. It has not been possible to prove the origin of the new outbreak. We ran down every possible lead, considering possibilities of sabotage, of carryover in animals, of carryover on premises, and it is our opinion that the most likely source of this outbreak was a carryover of the disease in one or more of the recovered animals that had been left in that area after the termination of the eradication work on the first outbreak. That would be giving to the animals the possibility of carrying the virus for at least 22 months and we have no proof that that could be done. But we had some 17 million susceptible animals involved in the first outbreak. So we had a test on a much larger scale than ever before to determine whether there might be carrier animals. We think that is the most likely way in which the disease was carried over.

Now, following your question one step further, it is possible that there may still be some carrier animals in Mexico. So we are leaving there a small crew of people to be on the lookout in case the disease should recur. We think the possibility this time is much less than it was before because of the lesser number of animals that have been exposed to the disease.

Mr. ANDERSEN. Have you officially declared Mexico to be free from foot-and-mouth disease?

Dr. CLARKSON. Yes, sir; we have, on January 1, 1955.

Mr. ANDERSEN. I understood you had. I wanted it in the record.

Dr. CLARKSON. When that was done, the border was reopened to normal importations of cattle, sheep, swine, and goats, from the Northern States of Mexico, the States that have for many years supplied cattle to this country; mostly they are feeder cattle.

Mr. ANDERSEN. You are not, however, permitting the entry into our country of cattle from formerly infected areas?

Dr. CLARKSON. No, sir; the regulations were changed when the border was opened on September 1, 1952, to provide that a special permit must be obtained from the office in Washington for any cattle, sheep, swine, or goats originating in the area south of the Border States and Durango, which is near the Border States. We have had several requests for permits. We have issued none. It is possible that some might be issued in some of the areas that are south of those States but which were still far removed from the area of foot-and-mouth disease infection.

Mr. ANDERSEN. Thank you, sir.

CHAROLLAISE CATTLE

Mr. MARSHALL. Dr. Clarkson, while we are on this subject, what happened with those Charollaise cattle that were smuggled into this country?

Dr. CLARKSON. The Charollaise cattle were smuggled into this country during the period when the border was opened after September 1, 1952. They did, however, come from the area where the disease had been existent and so, as was outlined a moment ago, we had not issued a permit for their entry. They were subsequently smuggled into this country and then were discovered and apprehended by the Bureau of Customs with our help and held under quarantine in

Louisiana. All but three of them were returned to Mexico during the first part of this month. The Bureau of Customs has given until the 8th of March for the return of the other three and we believe that they also will be returned to Mexico.

Mr. MARSHALL. Who paid for the cost of care of these cattle while they were in this country?

Dr. CLARKSON. They were under custody of the Bureau of Customs. They paid for holding them. One of the conditions of their return to Mexico was that the owner make the Bureau of Customs whole for that expenditure. I understand that that has been done.

Mr. MARSHALL. Why did it take so long? That is a year and a half.

Dr. CLARKSON. Yes, sir. The circumstances surrounding the importation of these cattle were such that the animal-quarantine laws administered by the Department of Agriculture did not permit the Department to seize and dispose of the animals. In other words, we find that our laws would permit such action if we could demonstrate disease in those animals. The situation was this: We could not issue a release for their importation into this country because we felt that they might be carriers of foot-and-mouth disease—we were not willing to certify to their health, but we could not demonstrate a disease. Therefore, we could not seize them. So the Bureau of Customs had to work with the owners to get the cattle out of the country.

Mr. MARSHALL. The livestock men in my section of the country have been greatly disturbed over the possibility of danger of spreading disease. The failure to return cattle that were smuggled in is direct violation of the quarantine laws, to the extent that these were. I am sure it is going to be a relief to them to know that these cattle will shortly be returned.

Dr. CLARKSON. Yes. The State livestock sanitary officials, I think it is safe to say of all the States, at least all we have heard from and that is a great many, were very much concerned about it and shared our position as to the health hazard of these animals. We all are glad to have them out of the country.

Mr. MARSHALL. Thank you.

COSTS OF ERADICATION OF FOOT-AND-MOUTH DISEASE

Dr. CLARKSON. The cost of continuing the program in relation to the Mexican outbreak during this fiscal year, 1955, is estimated at $1,545,000. We have a small force still in Mexico with several field teams and our diagnostic laboratory still operating. The effort mainly is on work with committees of livestock people throughout the area on the reporting of disease. Our people with their Mexican counterparts are working with the committees and running down any suspected cases of vesicular disease. After July 1, we expect to have a very small unit there and that we will be able to finance the work from the regular appropriation for Salaries and Expenses, in which a small item of $40,000 has been earmarked for that purpose. We are anticipating that it will not be necessary to make any more borrowings for this purpose from Commodity Credit Corporation after this fiscal year.

Mr. WHITTEN. It would mean an item in your budget next year to repay CCC for this current year's outlay, however, would it not?

Dr. CLARKSON. Yes, sir. Unless that were added to this year's payment. I do not know whether that can be done.

Mr. WHEELER. I do not think there is any basis for doing that because we don't know what the amount will be for the entire fiscal year 1955.

SCRAPIE IN SHEEP

Mr. WHITTEN. What is the situation on scrapie in sheep? How much money has been spent?

Dr. CLARKSON. The present situation is that we know of no more scrapie in this country. There have been outbreaks in a number of States. They were all eradicated. We have about 800 flocks under surveillance in many parts of the country where State and Federal veterinarians are maintaining surveillance. These flocks have had some kind of prior contact with flocks where we have found the disease and where it has been eradicated.

We have not used emergency funds for scrapie during this fiscal year and do not anticipate that it will be necessary in future minor outbreaks. This year we are financing the work from our "Salaries and expenses" item. It is anticipated that the expenditures for scrapie eradication will be $42,000 this fiscal year.

OBLIGATIONS FOR RESEARCH ON FOOT-AND-MOUTH DISEASE

Mr. WHITTEN. How much of the $1,900,000 for research in 1955 have you obligated to date?

Dr. CLARKSON. Dr. Simms?

Dr. SIMMS. I am sorry that I can't give you the exact amount that is obligated as of today but I can put it in the record for you.

Mr. WHITTEN. We will be glad to have it.

(The information requested follows:)

Fiscal year 1955 obligations for research on foot-and-mouth disease were $777,076 as of December 31, 1954.

Mr. WHITTEN. What work is being done?

Dr. SIMMS. There was a laboratory on Plum Island when we took it over on July 1, 1954, and we have been working there actively since the beginning of this fiscal year.

Of course, that laboratory is small as compared to what we will have when the building now under construction is completed. It is an expensive laboratory to operate. I believe we called your attention to that last year. The protective procedures are just about as expensive for a small unit as it will be for the much larger unit. The expense of getting people back and forth to the island is just as great to move a staff to work in this small laboratory as it would be when we have the two in operation. But we are working actively there. As a matter of fact, the workers have already come up with some information, some discoveries, that are of some practical value to us.

Mr. WHITTEN. How many different diseases are you working on down there now?

Dr. SIMMS. At the present time we are working with only one disease there. We have all told, up to now, worked with 3 differ

ent diseases, 1 at a time, because the laboratory is a 1-unit establishment. We can work with only one thing at a time.

Mr. WHITTEN. How much of the original $10 million have you spent in the enlargement?

Dr. SIMMS. The contract for the main building was let, as you know, in June 1954. The contract itself was over $7.7 million. Then in addition to that, the accessory buildings and facilities will use up practically all of the $10 million. Just how much of that has actually been paid to the contractors, I can't say. It is paid, as you know, as the building progresses but the original $10 million is practically all earmarked. We are holding a little bit of it in reserve for taking care of unforeseen emergencies that might arise during the contracting period. The contractor assures us that the building will be ready for delivery at approximately the date called for in the contract which is January 1, 1956, I believe.

ANIMAL DISEASE RESEARCH IN FOREIGN COUNTRIES

I would like, before we complete our discussion of this item, to call your attention to a condition that does arise. In studying some of the foreign diseases, it will, from time to time, probably be more economical to do some work in the countries where the diseases exist than to bring the material here. We would like to have your consent—I think it is clear under the law—but I think we would like for you to know that we contemplate this. We contemplate the possibility of sending a small team, perhaps to Asia or to Africa, it being cheaper for us to do so than to do such work here.

Mr. WHITTEN. Having used the same argument many, many times myself in connection with the laboratory, I personally am not in a position to find fault with your proposal.

What other work are you doing of note in your research, other than what we have discussed here?

Dr. SIMMS. We are working some right now with African swine fever. However, that work is being done in Africa, not with this fund, but with a small amount that we could divert out of our regular funds. Of course we are continuing our work in Europe with foot-and-mouth disease until the laboratory here is completed. But that is the sum total of the work or activities in foreign countries with exotic diseases.

Mr. WHEELER. Mr. Chairman, before we leave the discussion of the work of the laboratory, I would like to point out that the estimate for 1956 for research work at the laboratory is $1,900,000, the same amount as for this fiscal year, and is based on the operation of the present establishment. Depending on the actual date of completion of the new laboratory, it may be necessary to consider in the spring of 1956 whether additional funds will be needed for accelerating the research work upon completion of the new laboratory. There are many factors that we can not anticipate at this time. Therefore, the present estimate for 1956 does not include, or take into account, additional expenses arising from the scheduled completion of the laboratory by January 1, 1956.

Mr. WHITTEN. Thank you, Mr. Wheeler, we appreciate your calling that to our attention, that there may be a supplemental request coming before us.

ERADICATION OF VESICULAR EXANTHEMA

Dr. CLARKSON. We have one other item here, vesicular exanthema.

Mr. WHITTEN. I would like for you to report on that. I would like to know how much we have expended on it and what the present situation in so far as State cooperation in connection with it is concerned.

Dr. CLARKSON. A good deal of improvement has been made during this past year. Significantly, the greatest change has been in California and Massachusetts. You will recall that California, Massachusetts, and New Jersey have had the largest numbers of garbage-fed swine. Therefore, their problem has been considerably greater than in many of the other States. In Massachusetts, they began a program about a year and a half ago of gradually bringing the garbage feeding installations under a cooking program. It has been possible during that time to release a great many of them from the quarantine. At the present time, in Massachusetts, about one-third of the swine are still being fed on raw garbage.

They have had some additional outbreaks in that area during that period, but not very many.

Then, in California, which has had the largest numbers of garbage-fed swine, the State, after a series of hearings, went into a very intensive program early last year, putting into effect a series of restrictions on marketing which have had the effect of bringing their feeders under arrangements for the cooking of garbage at a very rapid rate. So that, as of now, there are somewhat more than three-fourths of the garbage-fed hogs that are receiving cooked garbage. The incidence of the disease has gone down and we have been able to release a great many areas of the State of California from quarantine.

In New Jersey, the remaining State with a large problem, we have not made as much progress. During the past 3 or 4 months, however, it has been possible to release several areas from the quarantine. We have tried to work out a number of different arrangements with the State that seemed to fit their needs but we have not made the progress we would like to make. There is evidence now that leads us to believe that New Jersey will make good progress in the next few months. But, frankly, that is our most difficult spot at the present time.

There is in the notes a series of charts. The one following page 141 shows the incidence of the disease. Those are new occurrences, month by month during the past 3 years. You will notice that the numbers have reduced rather markedly over the past 2 years.

Mr. WHITTEN. Do you have any hopes of eradicating this problem completely?

Dr. CLARKSON. Yes, sir, we do. That is definitely our purpose and goal. We have the full support of the State livestock sanitary organizations, the hog growers, transportation industry, stockyards people, and the meat industry. There is united support for this program, and we feel confident that it can be done. The research that Dr. Simms' people have been doing has helped out very markedly. There are two or three other charts which show, first, the areas where the disease has appeared. That is the one marked "No. 2". That is a composite of all of the areas where the disease has appeared.

The next chart, No. 3, shows the areas that are now under quarantine, and the next chart shows the States that have garbage-cooking laws. Actually, California should be shown in dark on that chart because, while they do not have a formal garbage-cooking law, they have accomplished the same purpose by other means.

The obligations this year on this program were $1,096,416 as of December 31, 1954.

Mr. WHITTEN. Any questions? If not, Dr. Clarkson, we thank you and your associates for your presentation, which we have found of great interest.

REPAYMENT TO COMMODITY CREDIT CORPORATION FOR ERADICATION OF FOOT-AND-MOUTH AND OTHER CONTAGIOUS DISEASES OF ANIMALS AND POULTRY

Amounts available for obligation

Appropriation or estimate (obligations incurred): 1956	$5,788,897

Obligations by activities

Reimbursement for costs incurred in prior fiscal years for eradication of foot-and-mouth and other contagious diseases of animals and poultry: 1956	$5,788,897

Obligations by objects

11 Grants, subsidies, and contributions: Repayment to Commodity Credit Corporation: 1956	$5,788,897

Analysis of expenditures

Obligations incurred during the year (total expenditures out of current authorizations): 1956	$5,788,897

Mr. WHITTEN. The purpose statement and the accompanying material in connection with repayment to Commodity Credit Corporation for eradication of foot-and-mouth and other contagious diseases of animals and poultry will be included in the record at this point. (The material referred to follows:)

PURPOSE STATEMENT

The purpose of this request is to provide funds to reimburse the Commodity Credit Corporation for advances made and other costs incurred in fiscal year 1954 for emergency livestock disease eradication activities administered by the Agricultural Research Service pursuant to authority contained in the Department of Agriculture Appropriation Act, 1954. Since fiscal year 1948, the agricultural appropriation acts have included an authorization which provides that, when emergency outbreaks of diseases threaten the livestock or pountry industry, the Secretary may transfer to the appropriation "Foot-and-mouth and other contagious diseases of animals and poultry" such sums as he may deem necessary from appropriations or funds available to other bureaus, corporations, or agencies of the Department. This authorization covers not only outbreaks of diseases in this country but cooperation with the Government of Mexico in the eradication of foot-and-mouth disease and rinderpest and authorization of such protective measures as are necessary to prevent introduction or spread of the disease in this country.

Transfers to finance foot-and-mouth disease eradication and preventive measures in connection with outbreaks of the disease which have occurred in Mexico and Canada since fiscal year 1948 have been made from Commodity Credit Corporation funds. Subsequently, Congress has provided for repayment of such transfers.

In fiscal year 1955 it is anticipated that the activities in connection with the May 23, 1953, outbreak of foot-and-mouth disease in Mexico will be concluded, since Mexico was declared free of the disease December 31, 1954.

Appropriated funds:	
Appropriated, 1955 [1]	
Budget estimate, 1956	5, 788, 897
Appropriation act, 1955 (fiscal year 1953 program), and base 1956	
Budget estimate, 1956 (fiscal year 1954 program)	$5, 788, 897
Increase (to reimburse Commodity Credit Corporation for costs incurred during fiscal year 1954)	+5, 788, 897

[1] Cancellation of notes in the amount of $2,064,060 was authorized in Public Law 295, approved Feb. 12 1954, to cover repayment of expenses incurred in fiscal year 1953.
[2] Covers expenses incurred in fiscal year 1954.

PROJECT STATEMENT

Project: Reimbursement for costs incurred in prior fiscal years for eradication of foot-and-mouth and other contagious diseases of animals and poultry:	
1954	
1955 (estimated)	
1956 (estimated)	$5, 788, 897

An appropriation is requested to discharge indebtedness to Commodity Credit Corporation for funds transferred and expenses incurred during fiscal year 1954 (including interest thereon through June 30, 1955) in connection with the program for the eradication of foot-and-mouth disease in Mexico. These transfers were made pursuant to authority granted in the Department of Agriculture Appropriation Act, 1954.

Following the enactment of Public Law 8 approved February 28, 1947, the Department entered into a cooperative program with the Government of Mexico to eradicate an extensive outbreak of foot-and-mouth disease in that country. Because of the nature of the disease it was not possible to make accurate estimates of the cost of the program. Therefore, beginning with the fiscal year 1948 Congress authorized the transfer of funds to the appropriation item "Foot-and-mouth and other contagious diseases of animals and poultry," to finance the work. Transfers made from funds of the Commodity Credit Corporation have been repaid in prior years either by appropriations or authorization to cancel notes. A summary of appropriations and authorizations to cancel notes follows:

Source of funds for financing program, fiscal years 1947–53

Item	Appropriations	Cancellation of notes	Total
Department of Agriculture Appropriation Act, 1947, approved June 22, 1946	$305, 000		$305, 000
Public Law 22, approved Mar. 27, 1947	9, 000, 000		9, 000, 000
2d Urgent Deficiency Appropriation Act, 1947, approved June 27, 1947	1, 500, 000		1, 500, 000
Emergency Appropriation Act, approved July 3, 1947	5, 000, 000		5, 000, 000
Department of Agriculture Appropriation Act, approved July 30, 1947	100, 000		100, 000
2d Deficiency Appropriation Act, 1948, approved June 25, 1948	[1] 25, 400, 000		25, 400, 000
3d Deficiency Appropriation Act, 1949, approved Oct. 10, 1949	[1] 34, 000, 000		34, 000, 000
Department of Agriculture Appropriation Act, 1952, approved Aug. 31, 1951		$32, 700, 000	32, 700, 000
Department of Agriculture Appropriation Act, 1953, approved July 5, 1952		11, 240, 532	11, 240, 532
Department of Agriculture Appropriation Act, 1954, approved July 28, 1953		7, 057, 575	7, 057, 575
Public Law 295, approved Feb. 12, 1954		2, 064, 060	2, 064, 060
Total appropriated funds and cancellation of notes	75, 305, 000	53, 062, 167	128, 367, 167

[1] Reimbursement to Commodity Credit Corporation.

The obligations under this program for fiscal year 1954, for which repayment is now requested, and a summary of the financing through the Commodity Credit Coporation follows:

EXPLANATION OF ESTIMATES

Eradication of foot-and-mouth disease—obligations, 1954

1. Cooperation with the Government of Mexico in the control, eradication and prevention of foot-and-mouth disease:		
Payments made to the Mexican-United States commissions for the eradication and prevention of foot-and-mouth disease in Mexico	$3, 520, 236	
Direct Federal expenses for program in Mexico	1, 344, 519	
		$4, 864, 755
2. Mexican border inspection and quarantine		917, 662
3. Interest:		
Actual on advances made prior to June 30, 1954	$119, 822	
Amount provided by 1955 cancellation of notes for estimated interest from July 1, 1953, through June 30, 1954	−40, 962	
		78, 860
Total		5, 861, 277
Less:		
Prior-year adjustments in expenses incident to handling of canned meat and meat products		+3, 469
Prior year balance available in 1954		−292, 262
1954 balance available in 1955		+159, 845
Total due June 30, 1954		5, 732, 329
Estimated interest through June 30, 1955		56, 568
Total amount for reimbursement to Commodity Credit Corporation		5, 788, 897

Summary of cost of financing program through Commodity Credit Corporation—Fiscal years 1948–54 with interest to June 30, 1955

Total transfers from Commodity Credit Corporation		$149, 518, 000
Expenses incurred:		
Interest on funds transferred	$2, 278, 179	
Expenses incident to handling of canned meat and meat products	3, 314, 335	
		5, 592, 514
Subtotal		155, 110, 514
Less:		
Reimbursements:		
By appropriations	59, 400, 000	
By cancellation of notes	53, 062, 167	
Receipts from sales of canned meat and meat products	36, 803, 723	
Reimbursements from Mexican packing plants for inspection services	112, 295	
		149, 378, 185
Total due June 30, 1954		5, 732, 329
Estimated interest July 1, 1954, through June 30, 1955		56, 568
Amount to be reimbursed to Commodity Credit Corporation		5, 788, 897

EXPLANATION OF NEW LANGUAGE

The estimates include proposed new language for this item as follows (new language in italic):

"For reimbursement to Commodity Credit Corporation for sums transferred to the appropriation 'Eradication of foot-and-mouth and other contagious diseases of animals and poultry', fiscal year 1954 (including interest thereon through June 30, 1955), pursuant to authority contained under such head in the Department of Agriculture Appropriation Act, 1954, $5,788,897."

This proposed new item would provide an appropriation to reimburse the Commodity Credit Corporation for sums transferred and other expenses incurred for foot-and-mouth disease control and eradication activities during fiscal year 1954, including interest thereon through June 30, 1955.

FRIDAY, FEBRUARY 11, 1955.

PAYMENTS TO STATES, HAWAII, ALASKA, AND PUERTO RICO

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$13,453,708	$19,453,708	$24,753,708
Unobligated balance, estimated savings	−16,386		
Obligations incurred	13,437,322	19,453,708	24,753,708
Comparative transfer from "Agricultural Marketing Act, Agriculture"	268,000		
Total obligations	13,705,322	19,453,708	24,753,708

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
1. Payments to agricultural experiment stations	$13,526,012	$19,108,708	$24,249,708
2. Federal administration under sec. 9 of Bankhead-Jones Act	179,310	345,000	504,000
Total obligations	13,705,322	19,453,708	24,753,708

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Total number of permanent positions	31	52	72
Full-time equivalent of all other positions	1	1	1
Average number of all employees	26	47	67
Number of employees end of year	32	52	72
Average salaries and grades:			
General schedule grades:			
Average salary	$6,154	$5,948	$5,935
Average grade	GS-8.5	GS-8.6	GS-8.6
01 Personal services:			
Permanent positions	$150,056	$274,000	$390,555
Positions other than permanent	2,120	1,900	1,645
Regular pay in excess of 52-week base	764	1,200	1,600
Payment above basic rates	70	800	1,200
Total personal services	153,010	277,900	395,000
02 Travel	18,006	31,000	49,000
03 Transportation of things	767	1,500	2,500
04 Communication services	1,120	1,900	2,500
06 Printing and reproduction	4,004	6,000	10,000
07 Other contractual services	115	1,300	2,500
Services performed by other agencies		18,600	27,000
08 Supplies and materials	152	700	3,000
09 Equipment	2,008	5,800	12,000
11 Grants, subsidies, and contributions:			
Hatch Act, approved Mar. 2, 1887	719,905	720,000	720,000
Adams Act, approved Mar. 16, 1906	719,848	720,000	720,000
Purnell Act, approved Feb. 24, 1925	2,879,355	2,880,000	2,880,000
Bankhead-Jones Act, secs. 3 and 5, title I (act of June 29, 1935)	2,862,838	2,863,708	2,863,708
Bankhead-Jones Act, secs. 9 and 11, title I, of the act approved June 29, 1935, as amended by the act of Aug. 14, 1946 (Research and Marketing Act of 1946)	5,807,195	11,155,000	16,296,000
Hawaii Act, approved May 16, 1928	90,000	90,000	90,000
Alaska Act, approved Feb. 23, 1929	15,000	15,000	15,000
Alaska Act, approved June 20, 1936, as amended by the act of Aug. 29, 1950	75,000	75,000	75,000
Puerto Rico Act, approved Mar. 4, 1931	88,871	90,000	90,000
Agricultural Marketing Act (title II), sec. 204 (b), approved Aug. 14, 1946	268,000	500,000	500,000
15 Taxes and assessments	128	300	500
Total obligations	13,705,322	19,453,708	24,753,708

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$16,027	$24,874	$48,582
Obligations incurred during the year	13,437,322	19,453,708	24,753,708
	13,453,349	19,478,582	24,802,290
Adjustment in obligations of prior years	−2,396		
Obligated balance carried forward	−24,874	−48,582	−58,290
Total expenditures	13,426,079	19,430,000	24,744,000
Expenditures are distributed as follows:			
Out of current authorizations	13,412,457	19,405,500	24,700,000
Out of prior authorizations	13,622	24,500	44,000

BUDGET JUSTIFICATION DATA

Mr. WHITTEN. The committee will come to order. We will consider State experiment stations next.

I would like to have inserted in the record at this point page 119 and tables A, B, and C.

(The material requested follows:)

Payments to States, Hawaii, Alaska, and Puerto Rico, Agricultural Research Service

Appropriation Act, 1955 and base for 1956	$19,453,708
Budget estimate, 1956	24,753,708
Increase (to strengthen and expand the research programs of the State agricultural experiment stations as authorized by title I, sec. 9, of the Bankhead-Jones Act, as amended)	+5,300,000

Project statement

Project	1954	1955 (estimated)	Increases	1956 (estimated)
1. Hatch Act (Mar. 2, 1887)	$719,905	$720,000		$720,000
2. Adams Act (Mar. 16, 1906)	719,848	720,000		720,000
3. Purnell Act (Feb. 24, 1923)	2,879,355	2,880,000		2,880,000
4. Bankhead-Jones Act, secs. 3 and 5, title I (act of June 29, 1935)	2,862,838	2,863,708		2,863,708
5. Bankhead-Jones Act, title I, secs. 9 and 11, of the act approved June 29, 1935, as amended by the act of Aug. 14, 1946 (Research and Marketing Act of 1946)	5,986,505	11,500,000	+$5,300,000	16,800,000
6. Hawaii Act (May 16, 1928)	90,000	90,000		90,000
7. Alaska Act (Feb. 23, 1929)	15,000	15,000		15,000
8. Alaska Act (June 20, 1936) as amended by the act of Aug. 29, 1950 (Public Law 739)	75,000	75,000		75,000
9. Puerto Rico Act (Mar. 4, 1931)	88,871	90,000		90,000
10. Agricultural Marketing Act, title II, sec. 204 (b) (Aug. 14, 1946)	268,000	500,000		500,000
Unobligated balance	16,386			
Total available or estimate	13,721,708	19,453,708	+5,300,000	24,753,708
Transfer in 1955 estimates from "Agricultural Marketing Act, Agriculture"	−268,000			
Total appropriation or estimate	13,453,708	19,453,708		

Distribution by State of payments to States as authorized by the Hatch, Adams, and Purnell Acts, title I, secs. 5 and 9, Bankhead-Jones Act, and sec. 204 (b), Agricultural Marketing Act—fiscal year 1955

State	Hatch, Adams, and Purnell Acts [1]	Title I, sec. 5, Bankhead-Jones Act	Title I, secs. 9 (b) 1 and 9 (b) 2 Bankhead-Jones Act	Sec. 204 (b) Agricultural Marketing Act	Total payments to States
Alabama	$90,000	$88,305.89	$255,186.33	$6,100	$439,592.22
Alaska	90,000	4,736.40	50,364.65	4,200	149,301.05
Arizona	90,000	16,740.68	72,577.17	4,000	183,317.85
Arkansas	90,000	66,187.20	211,783.02		367,970.22
California	90,000	102,716.44	230,087.89	10,300	433,104.33
Colorado	90,000	25,460.16	95,920.53	5,000	216,380.69
Connecticut	90,000	22,514.38	77,556.44	10,500	200,570.82
Delaware	90,000	5,970.02	55,714.48		151,684.50
Florida	90,000	48,046.76	125,387.84	14,000	277,434.60
Georgia	90,000	98,402.95	264,092.75	20,450	472,945.70
Hawaii	90,000	10,463.17	66,939.57		167,402.74
Idaho	90,000	16,866.19	83,530.75	5,000	195,396.94
Illinois	90,000	99,478.95	243,980.90	12,000	445,459.85
Indiana	90,000	79,141.32	211,396.15	27,500	408,037.47
Iowa	90,000	74,227.20	214,934.48	45,150	424,311.68
Kansas	90,000	53,057.23	148,309.14	12,400	303,766.37
Kentucky	90,000	93,378.88	264,036.42	16,500	463,915.30
Louisiana	90,000	60,813.78	179,737.59		330,551.37
Maine	90,000	22,270.68	84,908.54	17,500	214,679.22
Maryland	90,000	36,488.62	106,679.77	16,500	249,668.39
Massachusetts	90,000	36,698.19	95,538.52	4,000	226,236.71
Michigan	90,000	93,777.64	231,003.12	67,500	482,280.76
Minnesota	90,000	68,128.03	208,801.71		366,929.74
Mississippi	90,000	80,016.75	263,544.53	27,000	460,561.28
Missouri	90,000	78,849.57	232,680.25	13,000	414,529.82
Montana	90,000	18,004.00	79,554.23		187,558.23
Nebraska	90,000	41,343.56	130,704.24	5,000	267,047.80
Nevada	90,000	3,435.49	50,440.02		143,875.51
New Hampshire	90,000	11,363.43	63,676.97		165,040.40
New Jersey	90,000	32,575.43	94,560.83		217,136.26
New Mexico	90,000	17,027.28	79,600.02		186,627.30
New York	90,000	107,782.14	232,256.34	6,200	436,238.48
North Carolina	90,000	135,186.64	357,881.86		583,068.50
North Dakota	90,000	26,670.28	100,550.54		217,220.82
Ohio	90,000	118,853.05	278,117.96	11,000	497,971.01
Oklahoma	90,000	63,847.68	171,437.82	16,000	341,285.50
Oregon	90,000	35,230.21	110,927.06	17,000	253,157.27
Pennsylvania	90,000	155,317.78	298,239.36	2,500	546,057.14
Puerto Rico	90,000	66,036.41	246,006.87		402,043.28
Rhode Island	90,000	6,257.12	53,250.76	5,000	154,507.88
South Carolina	90,000	68,111.24	202,696.17		360,807.41
South Dakota	90,000	26,510.78	99,453.39	7,500	223,464.17
Tennessee	90,000	92,293.90	268,210.82	9,200	459,704.72
Texas	90,000	150,461.58	358,073.99	15,425	613,960.57
Utah	90,000	12,499.09	68,925.56	5,000	176,424.65
Vermont	90,000	12,884.06	67,964.72	1,500	172,348.78
Virginia	90,000	88,612.55	229,018.54	3,132	410,763.09
Washington	90,000	43,950.86	126,177.94	23,000	283,128.80
West Virginia	90,000	65,794.28	165,723.72	2,500	324,018.00
Wisconsin	90,000	73,259.15	211,983.49	6,500	381,742.64
Wyoming	90,000	7,662.93	59,873.77	12,500	170,036.70
Unallocated				12,443	12,443.00
Total	4,590,000	2,863,708.00	8,279,999.53	500,000	16,233,707.53
Regional research fund [2]			2,875,000.00		2,875,000.00
Grand total	4,590,000	2,863,708.00	11,154,999.53	500,000	19,108,707.53

[1] Each station receives $15,000 Hatch; $15,000 Adams, and $60,000 Purnell funds.

[2] These funds allotted to Regional Research projects recommended by the Committee of Nine, in accordance with procedures outlined in section 9 (b) 3, Title I, of the Bankhead-Jones Act as amended.

Distribution by State of payments to States for research, fiscal years 1954–56

State	Fiscal year 1954	Fiscal year 1955	Fiscal year 1956 (estimated)
Payments authorized by the Hatch, Adams, and Purnell Acts, title I, secs. 5 and 9 (b) 1 and 2, Bankhead-Jones Act:			
Alabama	$311,446.59	$433,492.22	$551,099.84
Alaska	121,013.61	145,101.05	168,312.59
Arizona	144,607.04	179,317.85	212,766.46
Arkansas	266,682.69	367,970.22	465,574.57
California	312,762.30	422,804.33	528,844.83
Colorado	165,505.66	211,380.69	255,587.54
Connecticut	152,978.61	190,070.82	225,814.23
Delaware	125,038.44	151,684.50	177,361.60
Florida	203,466.51	263,434.60	321,222.04
Georgia	326,190.47	452,495.70	574,208.01
Hawaii	135,388.16	167,402.74	198,253.15
Idaho	150,447.45	190,396.94	228,893.72
Illinois	316,773.33	433,459.85	545,903.23
Indiana	279,434.97	380,537.47	477,963.52
Iowa	276,366.93	379,161.68	478,218.44
Kansas	220,435.92	291,366.37	359,717.54
Kentucky	321,137.02	447,415.30	569,101.65
Louisiana	244,589.91	330,551.37	413,386.96
Maine	156,570.79	197,179.22	236,310.98
Maryland	182,147.63	233,168.39	282,333.85
Massachusetts	176,544.38	222,236.71	266,267.51
Michigan	304,301.02	414,780.76	521,293.07
Minnesota	267,068.05	366,929.74	463,160.09
Mississippi	307,518.25	433,561.28	555,020.94
Missouri	290,247.97	401,529.82	508,765.07
Montana	149,510.55	187,558.23	224,222.36
Nebraska	199,537.08	262,047.80	322,285.40
Nevada	119,752.03	143,875.51	167,121.78
New Hampshire	134,586.20	165,040.40	194,387.18
New Jersey	171,911.52	217,136.26	260,716.47
New Mexico	148,557.73	186,627.30	223,312.53
New York	318,959.36	430,038.48	537,078.36
North Carolina	411,907.61	583,068.50	748,005.36
North Dakota	169,131.43	217,220.82	263,561.50
Ohio	353,958.08	486,971.01	615,147.11
Oklahoma	243,293.50	325,285.50	404,295.98
Oregon	183,105.20	236,157.27	287,280.18
Pennsylvania	400,920.92	543,557.14	681,006.58
Puerto Rico	284,387.82	402,043.28	515,420.36
Rhode Island	124,040.13	149,507.88	174,049.54
South Carolina	263,865.76	360,807.41	454,223.91
South Dakota	168,399.51	215,964.17	261,799.21
Tennessee	322,229.98	450,504.72	574,114.92
Texas	427,282.80	598,535.57	763,560.98
Utah	138,460.26	171,424.65	203,190.34
Vermont	138,343.92	170,848.78	202,171.65
Virginia	298,100.49	407,631.09	513,178.76
Washington	199,782.84	260,128.80	318,280.37
West Virginia	242,258.83	321,518.00	397,895.01
Wisconsin	273,859.24	375,242.64	472,939.38
Wyoming	128,901.42	157,536.70	185,130.69
Total	11,773,707.91	15,733,707.53	19,549,707.34
Payments authorized for regional research fund sec. 9 (b) 3, Bankhead-Jones Act	1,500,000.00	2,875,000.00	4,200,000.00
Payments authorized for marketing research, sec. 204 (b), Agricultural Marketing Act [1]	268,000.00	500,000.00	500,000.00
Total	13,541,707.91	19,108,707.53	24,249,707.34

[1] Allotted to States by projects on the basis of recommendations by a committee of experiment station directors and approved by the State Experiment Stations Division, Agricultural Research Service.

Expenditures from non-Federal funds by State, fiscal year 1954

Alabama	$1,422,983.40
Alaska	195,134.77
Arizona	501,911.96
Arkansas	743,110.69
California	6,705,485.63
Colorado	854,956.48
Connecticut:	
State	380,962.08
Storrs	547,502.00
Delaware	354,159.16
Florida	3,009,683.61
Georgia	1,927,110.12
Hawaii	542,672.21
Idaho	729,636.40
Illinois	2,255,714.27
Indiana	2,510,573.02
Iowa	2,352,406.71
Kansas	1,368,963.71
Kentucky	627,856.58
Louisiana	1,797,267.84
Maine	328,024.42
Maryland	698,325.14
Massachusetts	506,484.08
Michigan	1,561,020.22
Minnesota	2,454,474.77
Mississippi	1,418,796.31
Missouri	806,812.29
Montana	844,904.42
Nebraska	1,317,717.03
Nevada	$85,304.97
New Hampshire	160,841.88
New Jersey	1,611,434.40
New Mexico	376,744.20
New York:	
Cornell	3,091,295.49
State	1,021,608.72
North Carolina	1,713,609.95
North Dakota	800,084.22
Ohio	1,800,762.84
Oklahoma	1,325,647.70
Oregon	1,982,111.63
Pennsylvania	1,266,553.01
Puerto Rico	1,057,686.19
Rhode Island	164,214.74
South Carolina	778,454.93
South Dakota	455,320.63
Tennessee	776,435.92
Texas	2,749,062.19
Utah	576,288.98
Vermont	121,648.69
Virginia	1,075,420.28
Washington	1,961,643.83
West Virginia	441,672.69
Wisconsin	2,612,814.00
Wyoming	433,893.22
Total	67,205,204.62

Mr. WHITTEN. Dr. Elting, we will be glad to have your general statement.

Dr. ELTING. Thank you, Mr. Chairman. It is a pleasure to appear before your committee again this year.

Mr. WHITTEN. Thank you, sir.

HISTORY OF RESEARCH AT STATE AGRICULTURAL EXPERIMENT STATIONS

Dr. ELTING. We would like to provide just a little background information for the committee on the program which we are discussing this afternoon as provided by the Hatch Act and the several other acts supplementary to it. Since 1887 these acts have provided for Federal support to aid in the research program at the State agricultural experiment stations. The exhibit material which we have available here gives a brief sketch of the several acts and then presents a concise picture of the sources of support which are currently available for the support of the State experiment stations.

Mr. ANDERSEN. Doctor, for my information, the experiment stations first came into being, did they not, in 1887 with the Hatch Act?

Dr. ELTING. Yes, sir; that was the parent act. While a few States did have experiment stations prior to that date, every State and Territory shortly thereafter established such a research center.

Mr. ANDERSEN. The Land-Grant Act went into effect in 1862?

Dr. ELTING. Yes, sir; 25 years earlier. The authorizing language in the Hatch Act states that in order to develop and disseminate scientific information which would permit a sounder agricultural industry, each land-grant college should establish a department to be known as an agricultural experiment station; and provided at that time that the Federal Government would contribute each year to each

State the sum of $15,000 to partially support that research effort. This marked the beginning then of a really nationwide research program in which every State had a participating institution. That effort has gradually expanded over the years until today we have close to 500 research centers maintained throughout the United States as a part of this State experiment station system. It literally attempts to serve the needs of the farming people in every major type of farming area in the Nation.

STATE SUPPORT OF RESEARCH WORK

If you will refer to the second exhibit, the chart which I have placed before you, there are interesting data there regarding the trend of support for this research program which indicates, first, that the Federal Government has had a continuing interest in supporting this program; second, that the States have assumed an increasingly significant share of the total support over the years. It is a program which in fiscal year 1954 involved about 8,000 research workers, approximately half of whom devote full time to research and the other remaining half divide their time between research and teaching.

A total of just about $80 million was expended on the program, $13 million of which was provided by the Federal Government in the form of the payments to States, and about $67 million provided from non-Federal sources, a ratio of just about 5 to 1.

The appropriation act for the current year did provide a substantial increase for payments to States. We do not have the exact figure on non-Federal support for this year but the trend has been upward at the rate of about $5 million each year during the postwar years.

There is attached another table which provides a 10-year look at the contributions from each of the States. Inasmuch as this committee expressed interest in that subject a year or two ago, we have brought that table up to date. It shows that this effort is shared proportionately, I think, by all the States and that in no case has there been a failure on the part of the States to significantly increase their support.

Before proceeding further to the details of our budget estimates, Mr. Chairman, I would like, with your permission, to describe in some detail how these funds are administered to the States, the role which the Department plays in achieving coordination of effort through the administration of these grants, and the degree of control which the Department can exercise by cooperating with the State stations in determining the course of this research program.

Mr. WHITTEN. We will be glad to have your statement.

ADMINISTRATION OF FEDERAL-GRANT RESEARCH FUNDS

Dr. ELTING. For nearly 50 years, since the passage of the Adams Act in 1906, the project system has been the basis for administration. The early years indicated that we must have some definite unit to which to tie the administration of these funds, and the project has lent itself well to that purpose. It simply provides definite units of work planned and outlined in each of the State stations to which definite allotment of funds may be made and on which progress may be reported.

Considerable uniformity has developed among all the stations in their approach to developing the research project plan. It concisely sets forth the objectives of the work which is to be undertaken, and so far as can be anticipated, states the procedures through which they will approach the particular problem in question. By law, the Secretary of Agriculture must ascertain each year at each of the States the use which they have made of these grant funds and their eligibility to receive subsequent allotments of the fund. That ascertainment is made through an annual examination on the ground by the members of the staff of the State Experiment Stations Division of the Agricultural Research Service. There are about 20 specialists who have mature experience in the various subject-matter fields; they compose our staff of examiners that make this annual examination. It is much more than purely a fiscal examination. It is essentially a review of progress of the research with an opportunity to interview each project leader to learn directly from him the problems he has encountered, the progress he is making and to receive from him direct information and also to impart to him related information from other States. Altogether it becomes an important step in our coordinating process.

PROJECT REVIEW

We have certain exhibits, sir, of the type of record which is developed in our office for each project that I believe will give you a better understanding of how we keep abreast of the progress and some measure of control that is exerted over the program supported by these Federal-grant funds.

The folder which we have placed before you represents a typical project folder. In this case, one from the Tennessee experiment station. In order that we may chronologically describe what has transpired, if you will look on the left hand side of the folder, you will find about the fifth page down the outline of the project. It was a document which was originally submitted by the State experiment station outlining the seriousness of the problem at hand, the resources which they could devote to it, and something of the approach that, in their judgment as best they could outline it, would be effective in solving this problem.

That project was submitted in the early days of the Research and Marketing Act of 1946 and represents one of the early projects undertaken under that act.

Above that is an index sheet indicating several exchanges of correspondence which have transpired in the approval of the project and in certain submissions since it was originally approved. Once that project was approved, the State was then authorized to expend a portion of their Federal-grant money in its support. You understand that by law the money was already in the State experiment station treasury. In other words, the money is paid in lump sum on a quarterly basis, but the stations are not authorized to expend that money until they have a program of approved projects. So there again the project becomes the control in the expenditure of funds.

On the right hand side of your folder are the series of annual progress reports which have been filed and which are typical of everyone of the some 4,700 projects now in our file. It indicates the continuing record which we build of each project or segment of work. In addi-

tion to that, on the top page, you will find a series of comments there by years, 1950, 1951, 1952, and so forth, which is in addition to the written report filed by the station. The examiner from our office briefly sets forth his appraisal of the work and any particular problems that may be encountered.

STATE SUBMISSIONS OF PROGRAM OF WORK

Now, in addition to that, at the beginning of each fiscal year each State station submits a program of work such as I have before me here. This again happens to be the program from the Tennessee experiment station. It sets forth this particular project we are examining and all other projects to be supported during that year from the Federal-grant fund in question. That program is reviewed each July 1, so that in effect we are approving each project at the beginning of each fiscal year, and any adjustments or revisions or terminations that may seem valid, based on our examination, then can be put into effect at the beginning of each fiscal year. We believe thereby that there is a reasonable degree of control exercised in the use of these funds. While it is true that the station exercises the primary right of initiation, the approval on the part of the Department affords full opportunity for coordination or refusal to approve, if it is evident that the work is outright duplication, or an opportunity to negotiate with the station in alining their project proposal with any other related work in progress elsewhere.

In passing, we do have a very fine publication which has just come out of that Tennessee project, which is a culmination of several years' work in this important field of fluorine toxicity as it affects, in this case, cattle and sheep. It is a publication which is important not only to Tennessee but to many other States having industrial areas that are causing atmospheric contamination and in turn possible damage to agricultural crops and livestock.

Mr. WHITTEN. Dr. Elting, I think this committee through the year has very much appreciated the fine work that is done by the State experiment stations. I welcome a chance to discuss this whole matter with you.

Last year and this, while the Budget recommended percentagewise large increases, to nearly double the Federal payment in 2 years, these recommendations have been at the expense of reducing various action programs and other things. For instance, in this year's budget the school lunch program was cut $15 million, presumably to offset increases which the budget has recommended for State experiment stations and others. That makes it hard on us. We either have to approve the cuts that have been made in soil conservation and school lunch programs and various other things, if we are to approve your increases, or we have to exceed the budget. That is the predicament we find ourselves in.

In former years I have had many friends with the individual State experiment stations come to me when I was chairman of this subcommittee wanting additional grants of funds to the States. I have told them if they would come before the committee and tell us what it was they wanted to use the money for, what additional projects they needed, that I felt sure the committee would give them a sympathetic hearing and doubtless take some affirmative action. Without ex-

ception they said, rather than get tied down here as to what they were going to use the money for, they would forego the chance of getting additional money.

As I understand it, once these payments are made to the States, you have no way to force the initiation of any project, is that right?

Dr. ELTING. The language in the several acts includes such terms as "shall encourage," "shall advise," "shall render help and assistance." It does not say that the Secretary may direct. I should say, however, that through exercising his duty in advice and assistance and in encouragement, that much can be done toward accomplishing, I think, the thing you have in mind, of attacking more critical problems. Certainly, much is done in gathering help from the several States to attack emergency problems as they arise.

Mr. WHITTEN. You have a chance to counsel with them, to encourage them, to urge them and plead with them and point out the wisdom.

Dr. ELTING. That essentially describes the authorization.

FEDERAL SUPPORT OF RESEARCH BY STATES

Mr. WHITTEN. The reason I ask is that we had in these hearings a gentleman from the State of Iowa, where apparently there is quite a problem in fruit trees; apparently some virus. He went to the State experiment station in Iowa and they told him that they did not have the money. He went to the Federal people here and they did not have the money. And yet, it is in a particular State and quite naturally the State has a direct interest in it. Now, in other hearings in the records it is disclosed that, when the Agricultural Research Administration has some project that it feels is of national interest and national benefit, they have had to contract with the State to do it. So that, in addition to this grant of funds for State experiment station use, the Federal Government through other means is having to pay by contract or agreement additional money to get the project carried on.

Now, I have been wondering if, instead of making this on a straight-out payment to the States, whether we could not more nearly assure the use of the funds for things of more than local interest, if we made the appropriation to the Research Administration in Washington. In the allocation of funds to the particular State, the national interest might be protected.

For instance, a very fine pamphlet that you show us on fluorine was issued by the experiment station in Tennessee. The question arises as to whether the State of Alabama or the State of New Hampshire or the State of Rhode Island or the State of Maine would be as apt to get proper distribution of that information as if that had been a federally initiated project with the Agricultural Research Administration taking the responsibility of seeing that it was sent into the area where the information is most needed and most usable.

Dr. ELTING. Well, Mr. Chairman, I am sure there is no concise answer to the question you raise as to what is the most desirable distribution of support in the individual States and at the national level. Certainly, many problems transcend State lines. The Congress certainly has recognized that in providing 25 percent of Research and Marketing Act funds as a regional fund in which two or more

States may cooperate. It further encourages the States to plan with each other and with the Federal agencies. Actually, about 50 percent of the moneys appropriated each year under the amended Bankhead-Jones Act are devoted to this regional program in which two or more States are cooperating, and in almost every case, cooperating also with the Federal Government. We have, in addition to the Federal publications, quite a series of regional publications now which deal with this same problem you are discussing of how to get proper distribution of facts into all areas where those facts may be useful. There are many other problems, of course, that are essentially of local interest. Also, every State is making certain contributions in the field of basic research, information which is recorded in our scientific literature. That becomes useful to researchers everywhere as stepping stones in the solution of practical problems.

Mr. WHITTEN. The committee believes in the value of research and we believe in the value of the State experiment stations. We have the responsibility not only of obtaining funds for research, but we have the job of trying to see that research is carried on to meet the most pressing problems and that the results are on such a basis as to have the widest distribution and use. The overall value of all of it is the end use of the information. It raises the question as to whether more authority in the Department here to allocate funds might not result in a better job of selection of the prime projects and a better chance from the national level to disseminate the information obtained—as against depending on a State far removed from another paying too much attention to the findings of some State far removed from its border.

Mr. PETERSON. Could I comment on that remark, please, sir?

Mr. WHITTEN. We will be pleased to have you.

FARMER'S INCREASING NEED FOR RESEARCH

Mr. PETERSON. One of the underlying problems, of course, in this whole area is that involved in Government doing for the farmer what he cannot do for himself. Obviously, he cannot conduct this research work for himself. That is just obvious. In looking at the table that was submitted here, in the heavy increment in the financing of research from State and local sources over the past few years, it is apparent that there has been demand from farm people for research to meet specific problems which they have, resulting from increase in technology.

Mr. WHITTEN. Certainly, I don't question that, Mr. Peterson.

Mr. PETERSON. The increase in technology on the farm and the wide use of chemicals and new types of fertilizers have raised problems in all of the communities and our purpose, among other things, in trying to strengthen the research within the States through the distribution of these funds, is to help the States to build their capacity, to meet the needs of the farmers where the farmers are and where those problems arise. They differ widely over the country in types of farming, in soil types, and all the various conditions.

It would seem that the system presently being used is in considerable measure answering the need. That the need for research was lagging behind the need for other things is one of the reasons why the proposals to strengthen this area of service to farmers.

I just wanted to make that observation on that particular point.

Mr. WHITTEN. That is the argument that we always hear. I am not in position to differ with that argument. I would like to point out, though, that in the President's message, and in this budget before us, funds are eliminated from other things on the basis that the States are better able to finance them than the Federal Government. Looking at it from another angle, and I always try to see all sides, in some places in this budget, where apparently the State people are having trouble getting money to do the job, we are cutting down the Federal contribution. But in this field where apparently the State people are having great success in getting funds to carry on their programs, this budget gives them some money. That strikes me as being rather inconsistent.

Mr. PETERSON. In the total distribution of funds there is always a matter of judgment to be used in the application of what you have available to distribute. As I said before in these hearings, it was not the intent to cut one thing at the expense of something else, but there was a matter of judgment to be applied in the allocation of your funds.

Mr. WHITTEN. Mr. Peterson, I do not mean to take issue with you, but the President has sent a budget down here which provides so much money. Now, do you take it he has asked the Congress to limit expenditures to that budget? Is that not the way you take it?

Mr. PETERSON. That is his request, I would take it.

Mr. WHITTEN. That's right. In that budget he has cut out and cut down various activities, including payments to States for other work. Now, if we go along with this increase and the one for Extension, we either have got to violate his request to hold the total down, or we have to go along with him in cutting this other work. Is it not just as simple as that?

Mr. PETERSON. I appreciate there is a problem of judgment which the Congress has to apply.

Mr. WHITTEN. We have a ceiling and either have to operate under the ceiling in the allocation of funds as he did or exceed the ceiling. There is no other way out.

Mr. PETERSON. As I see it, we are here discussing a budget to which the judgment of the Department of Agriculture in this case immediately before us has been applied. The committee will, undoubtedly, and should apply its judgment on the basis of the facts that can be developed with respect to it. With respect to the matter of the ability of the States to raise funds for various purposes, I can only speak from my own familiarity and my own region. I know that the demands and I should say requests for funds for agricultural research have very heavily exceeded the funds available from the States over the past many years. I think the increase in technology in agriculture have accelerated heavily. The funds that are being put into research has also increased substantially, but not because of any lack of recognition of the desirability of putting funds elsewhere also. But it is a matter of the requests and the problems of the farm people who have to meet these problems which arise from the new technology in agriculture.

Mr. WHITTEN. I can fully appreciate that, and I do not believe you have better friends in the Congress than the members of this subcommittee. I made the statement last year that, had these in-

creases come up on a straight-out request to strengthen them, I personally would not have had any occasion to oppose them. But when they come up at the expense of other programs which are equally beneficial, at least to those who believe in those programs and study them, it leads us to where the only thing we can do is to "rob Peter to pay Paul," or we have got to exceed the ceiling of the budget. So definitely this budget is offered at the expense of school lunch and various other things.

Mr. PETERSON. Certainly, I think you will all agree that there are not all of the funds available to do all of the things that all of us would like to do; there is no argument about that.

Mr. WHITTEN. The President's budget says if you want to follow the efforts of this administration, take it away from school lunch and give it to State experiment stations. That is the way they say to do it. We might not take it from the places that the President's budget indicates. But there is no question but what if we grant it and stick to his ceiling and help to balance the national budget, we have to take it from somewhere. Now, can you point out any better places, any place that you would say we should take it from other than the ones in the budget? That is putting you on the spot, but I just wanted you to appreciate the spot we are on.

Mr. PETERSON. I do appreciate it, I think, Mr. Chairman. I have dealt in a modest way with the budget problems with the legislative committees and county budget groups and other phases of government for a long time. It comes back to this matter of judgment. I want to assure you again that as I have the picture here, we have not tried to take it away from some one to put it here in that sense. That might have been the result. We have, on the other hand, tried to evaluate with the best information we could the most necessary places to put the funds. And whether the judgment was right or wrong, this was one of them.

Mr. WHITTEN. Mr. Peterson, and you might not be in position to speak, but if the committee feels that reductions in this budget, in school lunch, conservation and various other activities, constitute a mistake and are a step backward, and if it should see fit to restore those funds, are you in position to support these increases over and above the total budget?

Mr. PETERSON. Well, I would hardly be in a position to speak to that, Mr. Chairman, except to express this opinion that it is obviously within the prerogative of this committee to exercise its final judgment as the legislative body on those proposals, and that is what we expect. We have tried to use, I am sure, the best collective judgment we have in building this budget. We certainly would not claim that that is the only judgment that should be applied. We rather think it is not. The job here of the committee is to apply its judgment. It may find in its wisdom that there are changes which should be made. We think that this is a sound budget in the light of the immediate needs for all the problems that we have to meet. It is the light in which we present it.

Mr. WHITTEN. Thank you, sir. I could anticipate that that would have to be your answer, but I did want to let you know the position that we are in. We either can go along with these increases or we can give you these at the expense of other items in the Department.

or exceed the budget. All of us ask for this job, but sometimes it is not a pleasant one.

Mr. PETERSON. I was just about to observe, Mr. Chairman, I am sure we can agree budgeting is no easy matter, no matter where it occurs.

Mr. WHITTEN. I have seen times when things have been put in so it would look like Congress increased the budget.

Mr. PETERSON. I disagree personally with that type of approach.

Mr. WHITTEN. I can't say that it was true. I have seen times when it looked like that.

1955 INCREASE FOR PAYMENTS TO STATES

Dr. Elting, what report can you give us as to the uses of this increase last year? Do you have any detailed tabulation of projects that show the use of the $5 million extra that were given last year and the new $5 million you are requesting?

Mr. ELTING. We do have certain information on both counts, Mr. Chairman, that we would be glad to discuss with you. First, referring to the use made of the increase for the current fiscal year, it was an increase amounting to $5.7 million, which certainly is substantial. First, breaking that down by subject-matter fields, which I admit is not too enlightening—it simply gives a statement there of relative emphasis in the major fields at the national level. It is evident that marketing and problems in the general field of animal industry, including both animal husbandry and animal disease and parasite investigations have loomed very large, as problem areas. A total of 475 new projects have been initiated under the 1955 increase. We do have, of course, a detailed breakdown, State by State. I think the distribution of the regional research fund, which also is part of the exhibit that you have before you, gives considerably more detail as to where those increases have been applied. I would be glad if time permits to go into some discussion of subject matters which were expanded this year.

We find there were some 60 new projects approved this year that are definitely in the field that we would term "basic research." We are pleased with the indication that this increase has made it possible to go more deeply into many areas where we have been operating on the basis of empirical information without having a good, basic understanding. This is true, in the field of antibiotics, which literally is breaking out on many fronts. Antibiotics have come into wide usage in the preparation of feeds for livestock. We have witnessed a rather marked stimulation of growth in poultry and swine, where we have added antibiotics to the ration. Yet we have had little understanding as to why that has occurred, and I think it is imperative that we get to the bottom of many questions of that sort.

SIMILARITY OF FEDERAL AND STATE RESEARCH PROJECTS

Mr. WHITTEN. Pardon me for interrupting you there.

Of course, I realize in the broad description of projects that they come under the same type of word description, where, in the field they may be different.

This committee has heard the Department of Agriculture present its request and its reports on the Agricultural Research Service. For the present fiscal year they have $35,822,000. It is being requested that for next year they have $37,684,000 for research. Then, as we asked that Agricultural Research Service to break this down, you will find that the projects are in the fields of marketing, utilization, agricultural engineering, animal and poultry husbandry, animal diseases and parasites, field crop production, horticulture crop production, forestry production, soil and plant nutrition, plant disease, entomology, economical production, human nutrition, and home economics. All of those fields of research are also included in your tabulation.

Now, as we discussed with them the detailed projects they are carrying on, they have covered the same things that you have up to now; and may I say to you they claim credit for the same discoveries and the same progression.

I am just asking if, under those conditions, we haven't reached a point when there should be a little better coordination to see just wherein we may be meeting this need through the use of the $35 million of the Agricultural Research Service. They apparently seek the same answers and get the same results. Your statement claims credit for the same things that their statement claims credit for.

Now, it may be that you can't have too much information. But two sets of the same information costing two sets of dollars raises a question as to what action we might take legislatively or through this committee. If you compare the two, but by words they are the same, by reports apparently much of it is the same, by results they are much the same. It raises a question, if everybody doesn't want to do it at his place, even though it is being done at some other place.

Now, I have mentioned that so that you can cover it, if you know the answer to it.

Dr. ELTING. I will be glad to speak to that point, Mr. Chairman. It is inevitable when we try to catalog research as broadly as a dozen or so major fields, that every institution, State and Federal, engaged in agricultural research, is engaged in activity in those same subject matter fields.

RESEARCH PROJECT CLASSIFICATION

Perhaps it would help some to look at our project classification and to see how some 4,700 Federal grant-fund projects, now in our records, are classified.

We must first try to get some reasonable and systematic basis upon which to appraise this total program. We must catalog or categorize all of the research.

The first page that you are looking at is major categories, but now as you turn to succeeding pages there, you will see that each field is broken into subclasses and sub-subs, down to the fourth order of breakdown, in order that we may quickly compare work proposed in any area, with work going on in that area in any other location.

It is only as we start breaking this work down into much finer segments, Mr. Chairman, that we appreciate, or that we have an opportunity to really coordinate, and I can't argue with you that the work all sounds alike, when we are talking about it in this broad way.

COORDINATION OF STATE AND FEDERAL RESEARCH PROJECTS

Mr. WHITTEN. I realize that, and no one can appreciate that fact more than I.

As I understand your testimony, you do this job of trying to prevent duplication among the States. What efforts are made to match your projects with work carried on by the Agricultural Research Service in Washington? Do you have a list of their projects?

Dr. ELTING. Yes, sir. The two files are right adjacent. They are constantly cross-referenced so that when a new project comes up as a proposal, either from a Federal agency or from a State agency, there is reference to all of the related work, whether it is State or Federal, at the disposal of our reviewers. If our reviewers are doing their job—and we think they are—there is cross-reference to every bit of work in that field, whether it is State or Federal.

In certain areas we find many laboratories engaged in essentially the same problem. If we would look back over the years as to how we have made progress in certain areas such as untangling the vitamin B complex, we would find that many States were using essentially similar approaches to that.

Mr. WHITTEN. We are not discussing the value of research. I think we all agree on that. We are discussing the case you make for budget increases which would double the amount of money for this program in only 2 years.

RESEARCH IN RURAL SOCIOLOGY

I see here we have listed rural sociology. You know a few years ago we had to go into that matter. We found a lot of money being spent under the name of "Research," on social conditions in various sections of the United States.

In my own State one of the problems was the use of the swimming pool in one of the towns. A statement was made that in southern Illinois, one of the chief requirements for success on the farm was a "long-tom" shotgun and a hound dog.

That may be interesting information, but it is something I won't ask dollars for of this Congress. I just wonder if that is something you need to spend research dollars for, especially when you think of school lunch and some of the other reductions in this budget.

Dr. ELTING. We would be glad to review our whole program that is so classified, Mr. Chairman.

Mr. WHITTEN. Let's see what that is, if you have it there.

Dr. ELTING. I don't think we do have that.

Mr. WHITTEN. Certainly you didn't give me an inaccurate listing.

Dr. ELTING. I don't mean that at all, sir. We don't have the detailed project statements here.

There is the sheet which classifies it and you will find there are not a large number of projects. On the other hand, the Purnell Act and the Bankhead-Jones Act both clearly authorize research devoted to the improvement of rural life. We would classify the things we have applied this heading to, things that are approved after careful consideration, and we believe it falls within that clear authorization of the Congress.

Mr. WHITTEN. Rather than raising something that might be misunderstood, I will read here into the record what is shown here:

16. Rural sociology:
    - A. General
    - B. Population analysis and estimates:
        1. Composition and change
        2. Vital statistics
        3. Migration
        4. Population in relation to resources
        5. Study of special age groups—youth, aged, and so forth
    - C. Rural social organizations, institutions and service agencies:
        1. Studies of areas and regions
        2. Locality groups
        3. Formally organized groups, structure and participation
        4. Informal groups, structure, and participation
        5. Group processes and relations (social action) social processes
        6. Studies of leadership
        7. The family
        8. The school
        9. The church
        10. The library
        11. Cooperatives
        12. General farmers' organizations
        13. Agricultural extension
        14. Recreational facilities
        15. Health and welfare agencies
        16. Local government
    - D. Levels and standards of living:
        1. Income and expenditures
        2. Consumption of goods and services—health, welfare, recreation, and so forth
        3. Security (social security, insurance, savings, and so forth)
        4. Recreation and leisure
        5. Factors related to change in
        6. Status of groupings (socio-economic status)
    - E. Labor and tenure studies:
        1. The agricultural ladder
        2. Size, composition of, and changes in the labor force
        3. Wage structure in agriculture
        4. Labor and tenure relations (landlord-tenant relations)

Now, Doctor, I am sure that is of interest to a lot of people. But I doubt if the Congress knew, when we were all excited about more research funds last year, that that is what we had in mind.

Now, I wanted to say to you that your report there is not the first we have heard of that. The Research Service of the Department of Agriculture has been studying the difference in the clothing between rural people and city people in four counties in Kansas. Now, I am

sure that the folks in the 4 counties in Kansas know the differences and the folks outside of those 4 counties don't care.

Now, how much of that kind of thing exists through this?

FUNDS ALLOTTED FOR RURAL SOCIOLOGY STUDIES

Dr. ELTING. In answer to your question as to how much, Mr. Chairman, a relatively small part of the appropriation, actually less than 1½ percent, goes into this whole field of rural sociology. As I said before, any project proposals in this area are carefully scrutinized. Some of the headings that you have read into the record, I think——

Mr. WHITTEN. I just scrutinized those.

Dr. ELTING. That list, you understand, is not a group of project titles, but rather a classification structure which permits classification and a large majority of the projects actually are in the population analysis category.

Mr. WHITTEN. You didn't initiate that because you can't initiate projects in the States, can you?

Dr. ELTING. No, sir; we do not initiate.

Mr. WHITTEN. Now, you had a chance to counsel with them as to whether that was worth the money they were spending on it, and presumably you went along with it.

PURPOSE OF RURAL SOCIOLOGY STUDIES

Now, I want to know who is interested in that after you get it?

Dr. ELTING. Well, we believe, sir, when we approve it, that it will bring to light information that will improve the standards of living of rural people. If it isn't justified on that basis it isn't justified at all.

Mr. WHITTEN. Have you ever seen any report as a result of the research projects there?

Dr. ELTING. Indeed, I have. We could bring you a good many bulletins in such areas as rural health facilities, which is one area that you described there.

Mr. WHITTEN. What are you doing in connection with methodology?

Dr. ELTING. The social sciences are not an exact science in the sense that the physical or even the biological sciences are. In an attempt to measure some of these forces, if you please, or things that do determine the behavior of rural people, methodology is simply the development of methods by which to measure and express and evaluate those different factors.

Mr. ANDERSEN. Will you yield at that point, Mr. Chairman?

Mr. WHITTEN. Yes, sir.

RATE OF PROGRAM EXPANSION

Mr. ANDERSEN. It seems to me, Doctor, if more effort were made toward determining, for example, why a dozen eggs in Tyler, Minn., brings the farmer such a small price today and those same eggs sell in Washington, D. C., a week later for more than double what the farmer gets in Minnesota, it would seem to me that that kind of research would be much more beneficial to the farmers of America than some of this that the chairman has just read into the record.

I'm personally troubled with the idea that we are conducting the sort of research that the chairman has referred to because at the very

best, I don't think it is sufficiently concrete to be of much value to agriculture. I think you have admitted yourself that it is not exact as some studies could be, but that it is largely in the abstract.

It seems to me, Mr. Chairman, that it gets down to this point. I feel that when we as a Congress are called on to boost too rapidly the appropriations in any item, that we are apt to do a disservice to the agency involved, through not giving them sufficient time to sufficiently study and really bring into being worthwhile research items.

When you give too much money to anybody, whether it be your son or whoever it might be, that money may be misapplied. Doctor, I can't get away from the supposition in my own mind—and I wish you would try to divest me of it if you can, but I can't get away from the supposition that there is such a thing as mushrooming these appropriations for this very laudable purpose—extension and payments to the States—to the point where it will actually do you more harm than it will do you good.

Now, that is the point I would like to have brought into the discussion here, Mr. Chairman.

Dr. ELTING. I think your question raises questions that eventually the Congress will have to determine and it goes back to the statement of principles that you wrote into the Bankhead-Jones Act when you amended it in 1946, in which it was the expressed purpose to give agriculture a place in research equivalent to that in industry, and to do the amount of research that was necessary to give agriculture its proper place in the national economy, and to assure that the technical information was made available that would permit——

Mr. ANDERSEN. Doctor, my specific point and my specific question is this: Is the Congress doing it too rapidly for the good of extension and experiment stations?

Dr. ELTING. Yes.

Mr. ANDERSEN. Your answer "Yes" was not in answer to my question. I am asking, is the Congress raising your appropriations too much at one time? In other words, are we asking you to enlarge your aid to experiment stations to the extent that perhaps we are doing you an injustice, rather than an aid?

Dr. ELTING. It has been my observation, Mr. Andersen, that in the postwar years the experiment station system has experienced a steady growth that, I think, has been sound, and in my judgment, has not been more rapid than could be properly programed and staffed.

During the past 5 years, entirely at State expense, there have been new facilities in the way primarily of buildings, laboratories, and equipment, to the extent of $110 million, which indicates that facilities, a place to operate, has been provided.

We are talking in terms of last year's increase of some $5.7 million, of a program that, when applied to 51 institutions and to the 9 or 10 departments which normally exist in each of the experiment stations, reduces itself on the average to an increase of about one man per department per institution. Now, that, reduced to that figure, does not seem like an excessive rate of growth and I think it is at about that rate of growth that we have experienced, year by year, in the postwar years.

Mr. WHITTEN. Mr. Andersen, could I interrupt to ask this: What would be the reaction of this nurseryman from Iowa who wanted some attention paid to the virus disease affecting the apple trees in

the wide area of our country, and who was told that the State did not have funds to do the research, if he knew that funds of an equal amount were being used for the type of project that we just referred to.

Dr. ELTING. I expect he would feel he was being done an injustice, Mr. Chairman. I am not attempting to explain that situation because I have no knowledge of it.

There is an extensive program now going on in the field of viruses of fruits. There is in the making now a very substantial expansion of that field on a regional and even an interregional way. There are plans to establish in the Northwest, an extensive reservoir of virus-free stock, which may be available to any of the States, in an area where it is possible to maintain such a collection.

I am simply saying that there is wide recognition of the fruit virus problem, and whether we have given enough attention to it, I can't state at the moment, sir. I know it is not being wholly ignored by any means.

Mr. WHITTEN. Doctor, the point I am making is that the word "research" is an open sesame to anyone who wants more money. That very fact makes it more necessary for all of us to make sure all of this work is justified. It makes it awfully hard to prevent this type of project, which has relatively little worth in my judgment, from creeping in. It makes it harder for you to hold down against those who are going all out for research, without an analysis of what projects and what results are involved. It is along that line that I have pointed this out, as I have in numerous other places in the record.

Dr. ELTING. I would like to state, Mr. Chairman that the expansion of work in the area that we have discussed as sociology, has been relatively small. There certainly has been no boom in projects in that field with the increase. In fact, I think there have been virtually no new projects added in that field so certainly the increase granted last year has not caused a sudden boom of research in that area.

COMPLETION OF RESEARCH PROJECTS IN THE STATES

Mr. MARSHALL. Dr. Elting, when State experiment stations start on these projects, one of the requirements that you follow on through, as I understand it, is the matter of the length of time that you expect it is going to take to complete that project; is that right?

Dr. ELTING. At the beginning, we do ask the States to give their best estimate of how long they anticipate it will take, knowing that it is a figure that cannot be firmly anticipated because we never know how rapidly we will get results, but that is the request at the beginning; yes, sir.

Mr. MARSHALL. Can you tell me approximately what percentage of your projects are completed within the time that the station has requested?

Dr. ELTING. As a general principle it has become a practice to indicate 5 years as a reasonable expectancy of the life of a project.

Now, on the basis of our experience—and I have before me figures from 1950 through 1954—the rate of turnover—that is the percentage of the total number of projects completed each year has been as follows: 1950—18½ percent; 1951, 19.9 percent; 1952, 18.6 percent; 1953; 21.9 percent, and in 1954, 22.7.

In other words, those figures indicate that the average life of the project has been about 5 years; that there is a normal turnover of about one-fifth of our projects each year.

Mr. MARSHALL. You wouldn't have an idea as to how many of these were completed within the length of time that was specified in the first instance?

You stated that you have about that turnover, but I am wondering how realistic your figures are, on the original estimate?

Dr. ELTING. Without giving a direct answer may I suggest this, Mr. Marshall.

Our concept of administration here is one essentially of approving continuation of a project each year, so we in effect, while they have estimated in the beginning that it will perhaps take 5 years, we in effect approve a project only for 1 year, because it is resubmitted on the program at the beginning of each fiscal year. On the basis of our examination we make a determination of whether, in our judgment, it warrants prosecution for additional time—an additional year.

That estimate that they give us as to their best judgment of how long it will take, has not constituted a control figure in our procedure, and so frankly, we have not attached too much significance to the fact that they may say that in their judgment it will take 4 years or 6 years to complete it, because in our process of annual examination, we believe that we have a more accurate method of control than simply their statement at the beginning of how long it may take.

Mr. Marshall. You would also feel then, Dr. Elting, that their estimate in the first place was not too realistic, either?

Dr. ELTING. If they said 3 and it was actually 10, we would say that hadn't been a very realistic estimate, yes, sir. But, on the other hand, we do recognize that it is often impossible to make an accurate estimate of how long any particular subject may require for solution. We just can't predict how rapidly results will accrue.

Mr. MARSHALL. It would seem to me there might be some tendency on their part in estimating a time for a project, to make their project look a little rosier by shortening the time of that estimate so it doesn't appear as though we would be getting into a long, extended project on that basis.

It would seem to me that would handicap your control.

Dr. ELTING. That is possible. I think our examiners are sufficiently experienced that they can probably ascertain with reasonable judgment how long it is going to take. They are not completely fooled on that subject.

Frequently I know our correspondence on projects will indicate that time setup is not realistic and is inadequate, and so we are constantly negotiating with the States on points of that type, as a part of our total job of project analysis and approval.

Mr. MARSHALL. I appreciate your problem in trying to maintain some sort of uniformity, or control over States going off on many tangents in connection with research. However, it seems to me that one of your problems is one of duplication as between States and would become rather difficult.

QUESTION OF DUPLICATION OF EFFORT BY VARIOUS STATES

I notice in your central region, on page 1 of these instruments, that you provided for us, that you have an allotment to States under an item known as NCM–10, Economics of Grain Storage, where you have approved projects of almost the same identical amount for 10 of the 14 States listed.

Now, how could there possibly be 10 different viewpoints in those States on the matter of grain economics and storage? I can't quite follow that. It seems to me there must be cases where there is a considerable amount of duplication.

REGIONAL PROJECTS

Dr. ELTING. You are reading from a description of regional projects where we are dealing with areas, in which representatives of these several States have come together, and joined in planning their approach to the problem and each has accepted some phase of the total problem.

We believe that our system, here, of regional projects, represents a very important and effective approach to this subject of preventing duplication. It is true that out of $28,000 for this regional project, there has been essentially equal distribution. That doesn't represent the total money that has gone into these investigations because in the several States other moneys, either non-Federal or grant moneys will be added to this.

This represents a special allotment that they received out of the regional research fund.

There is in our record, then, a detailed outline of each State's participation in that project, so if it is duplication in a sense, at least it is planned duplication and repetition and it is not a case of 10 States working without knowledge as to what the other may be doing.

Mr. MARSHALL. It is your feeling that each State is taking some segment of the storage proposition.

Dr. ELTING. It is a joint plan where members from these participating States have joined their plans for approach and each has accepted a segment of it, with full knowledge of each of the others.

That process applies to all of the projects in that tabulation which you are reviewing Mr. Marshall, because that is a distribution of the regional research fund which, of course, is only——

Mr. MARSHALL. I presume that the same answer would apply to this oak wilt proposition where you have about 6 States carrying it out?

Dr. ELTING. Yes, and so to every other project represented in that particular tabulation because the whole tabulation applies to the regional research program.

You will find that pattern is repeated time and again through there, but in each case it has represented a planned effort. It is the procedure that has been developed since the regional project procedure was provided for in the 1946 bill.

Mr. MARSHALL. I think that answers another question because I have noticed in these projects quite a similarity within regions, so that I presume the reason for that is because your research advisory group has stressed in that region, these projects?

Dr. ELTING. That is right. Many of these problems are widespread. It isn't limited to the Northeast or Northwest.

We have groups in both the Northeast and the Northwest who have work in progress. There has been interregional as well as interstate planning, so that with some 20 or more States participating in that study, there is still definitely joint planning involved.

RURAL POPULATION RESEARCH

Mr. MARSHALL. I notice in the northeastern region you have an item "Rural population dynamics." Now what is considered in projects of that kind?

Dr. ELTING. That would essentially deal, sir, with the movement of people to and from the farm. It is an appraisal of why the pattern of farming is changing and what has happened to the manpower situation, broadly.

Now I would be glad to give you more details than that, if you are interested. I don't have the project outline before me.

Mr. MARSHALL. I would appreciate it if at this point you could put a little more information in the record as to just what you are doing.

Dr. ELTING. The word "dynamics" seems to suggest movement. It is an analysis of the movement that is happening within rural populations.

(The information requested follows:)

RESEARCH IN POPULATION DYNAMICS

The general facts of population characteristics—migration, birth rate, age composition, marital status, income and employment—are available in the publications on the 1950 census. However, the census is source or raw data which needs analysis and interpretation to be most meaningful and useful to individuals and agencies concerned with agricultural problems. As a result the regional research projects in the Northeast and North Central States on population dynamics involve the analysis of the available census data and the preparation of reports useful to policymakers, and program planners within the States and within the counties. All of the available census data will be appraised and the facts needing special analysis and interpretation will be presented before extending the research into problems which will require assembling of primary data.

The census provides data on agriculture as separate items of information and on population as separate items of information. To relate the two, and to know how work opportunities affect the family and the farm, it is necessary to get all information on the same farm and family. This is done by obtaining information by the survey method from sample families in representative local areas. With special surveys it is possible to work out solutions to specific economic and social problems which arise in the community and to better understand the interrelationships of the economic forces at work on the local level. A regional as well as local approach is needed because areas of work opportunities and people do not recognize State lines.

Profound effects have occurred in the areas where people have migrated to and also in the areas where people have migrated from. Of major importance to rural areas has been the pronounced decline in the number of persons on farms and the increase in the size of commercial farms. In 1940 persons on farms represented 23.2 percent of the total population whereas in 1950 they represented only 16.6 percent of the total population. Local studies are being made in some States to get facts on how local areas are being affected by recent population migration, changes in employment opportunities and how the families concerned are adjusting to the changing conditions. The information developed from census data provides the general background needed and the information developed from local studies provides a means for developing solutions to specific problems in specific situations.

Mr. WHITTEN. You will have to go into town to get information on most of them, won't you?

Mr. MARSHALL. Would you tell us what value this would be to the farm population?

Mr. ELTING. Yes, sir. We will put that in the record, also.

(The information requested follows:)

VALUE OF RESEARCH IN POPULATION DYNAMICS

Planning for schools, roads, and other community facilities must be done with a recognition of what future population trends are likely to be. Areas with few natural resources where the young people are leaving will find their communities burdened with long-term debts which are difficult to liquidate if they expand public facilities and services in the face of inevitable population decline. Sparsely settled areas such as many of the Great Plains communities, where farmers and their families are moving to town yet continuing to farm for a livelihood, presents a real problem in providing satisfactory public services for the people remaining on the farms. In the rural-urban fringe there has been a mushrooming demand for schools, roads, electricity, gas, and other public services and community facilities. Agriculture in the communities where there has been an influx of urban workers is beset with problems of higher taxes, maintenance of added new facilities in schools and roads. These new demands must be shared in by the farmers in the taxing units even though they do not contribute to the demand nor share in these new facilities and services.

Analysis of the data available in the Census serves as valuable information directly usable for planning programs. It also serves as background information for more detailed studies needed to fully understand relationships and significance of major trends.

Mr. MARSHALL. Do you feel that this study of rural population is one of value to the Department of Agriculture?

Dr. KNOBLAUCH. I believe the information obtained is of value to the State and to the farmers in the areas concerned, because it is directed to providing information on rural facilities, including schools, roads, and determining the taxation for rural land in relation to the population on the land.

There are other factors involved in studies of this type. For example, the matter of father-son relationships on farm operations, terms of agreements that should be made and that have been found most effective in different regions.

COORDINATION OF RURAL POPULATION RESEARCH STUDIES

Mr. MARSHALL. It seems to us that you have some duplication, there. Mr. Wells and his department in the Agricultural Marketing Service is doing some of the same work, are they not?

Dr. KNOBLAUCH. There is an element we might have mentioned previously. In the similarity of the results before you, you recognize that much of this work is cooperative between the State experiment stations and the Department of Agriculture and when you have these results related to you they sound like they are doing the same thing, but in effect they are working cooperatively on the same job, pooling their resources to get the most effective program on those particular jobs.

Mr. MARSHALL. Last fall, we had an agricultural census taken. Is there any duplication of this with the agricultural census?

Dr. KNOBLAUCH. Census information is a very vital part of the population dynamics study. They use a great deal of census infor-

mation as basic data for the study. They do not go out and get the same data that the Census Bureau does.

Mr. MARSHALL. Does this study have any relationship with Under Secretary Morse's statement about off-farm income?

Dr. KNOBLAUCH. I don't believe I quite understand the question.

Mr. MARSHALL. Under Secretary Morse made a speech in Kentucky not long ago where he was pointing out the bright spots of farm income for the next year and one of the bright spots he pointed out was the fact that there was more off-farm employment. Does this have any relationship to that?

Dr. KNOBLAUCH. "Dynamics of farm population" is involved in that. Another phase of the study is the number of part-time farmers, full-time operators, the individuals of the family employed in farming operations and those in off-farming operations. All of those are considerations of this study.

Mr. MARSHALL. It is interesting to note how interested the Department of Agriculture has become in off-farm employment.

SOUTHERN REGIONAL FAMILY LIFE PROJECT

On page 11, Dr. Elting, is listed "Patterns of child rearing in southern families and their relation to the personality development of children."

Dr. ELTING. It is a relatively new project.

Mr. WHITTEN. It is an old problem.

Dr. ELTING. It is an old problem but a new study.

Mr. MARSHALL. There, again, would you in your analysis give us a narrative report of the value of that to the farmer.

Dr. ELTING. We will attempt to do that, sir.

(The information requested follows:)

VALUE OF SOUTHERN REGIONAL FAMILY LIFE PROJECT TO THE FARM FAMILY

Both the Purnell Act and the 1946 amendment of the Bankhead-Jones Act authorizes "such economic and sociological investigations as have for their purpose the development and improvement of the rural home and rural life."

An important objective of the adult education program carried on by the Extension Service in each State is to provide information which will aid homemakers and parents in maintaining an attractive and satisfying farm home, conducive to a happy farm family. Home demonstration leaders and others responsible for carrying out family life educational programs are handicapped by lack of sound information on many phases of the program.

The study of child-rearing practices of southern rural families will afford basic facts concerning personality development of children and how they may best be directed by parents in order to become responsible individuals, well adjusted to rural life and conforming to society's expectations. Since the child's contacts within the family relationship are known to be among the most powerful influences on his personality, the quality of the adults of tomorrow is being determined in the families of today. Findings from this study are expected to be useful also in providing the way to more effective rural youth programs, such as 4-H Clubs. As more is learned of the participation types of program activity which stimulate initiative and independence in children, parents will find added incentive to sponsor such activity by their children. This not only has family and social welfare implications, but also has economic implications in a competitive society.

Industry now recognizes problems of personality, with particular reference to interpersonal relations both in the plant and the home, as a part of its total program. Agriculture, as the most vital industry of the Nation, should be equally concerned with the morale of those who live and work in rural areas.

AREAS OF RESEARCH

Mr. MARSHALL. On page 120 of your House notes you point out five areas of research needing special emphasis. Aren't these just about the same items that you have requested the increase for last year?

Dr. ELTING. There are repeated some of the same areas referred to a year ago and I suspect, Mr. Chairman, that each year hereafter as we discuss problems, each of them will likely appear again as important problem areas. Again we are faced with the difficulty of trying to categorize research in very broad areas. It gives no insight as to the various specific aspects of the problem that will finally be submitted for detailed study.

Frankly, sir, I don't know how it is possible to bring before this committee in any usable form, all the proposals that will come from 51 separate institutions, and representing them any problems with all their local aspects that are involved in a program of this sort.

The No. 1 item there is more efficient livestock production. We believe, despite all the work that we have done, that it still represents the greatest problem area, so far as trying to adjust our agricultural production picture in this Nation is concerned, and to swing more to the use of acres to produce feed for livestock, either as pasture, or as hay and feed grains.

Tied up with that is the disease and parasite problem which, despite substantial increases that were made this year, seems to stay one jump ahead of us. This is reflected by recent, very disturbing outbreaks of an apparent virus disease of cattle, which perhaps Dr. Simms has already discussed with you. It has been the subject of recent regional conferences.

Mr. MARSHALL. What use did you make of the increase that was provided to you last year?

Dr. ELTING. The tabulation I have already handed to you shows broadly where that increase is applied.

Mr. MARSHALL. Dr. Elting, the reason I am asking the question in this regard is this: A year ago when this committee met, you came up with these justifications and, of course, it seems to me there is quite a little possibility that some of the requests that have been coming in for these particular items have already been covered by the Congress when they granted the previous appropriation. It would be rather difficult, would it not, to be able to go back through all of these justifications and pick out those that have been covered and those that have not been covered.

RESEARCH PROBLEMS NEEDING ADDITIONAL EFFORT

Dr. ELTING. I would state to you very frankly, Mr. Marshall, that much of this justification is a broader justification than the one used, or that you are describing. It is a justification for the total volume of research in this country that is warranted, in relation to the sizes of industry, that is warranted to put agriculture in a favorable position with other elements of our economy, a justification that is based simply on the proposition that our whole research machine is not still as large as is warranted to service an industry, and a justification that further increases will still be sound investment in the interests, not

only of the farmer, but the total welfare of our Nation. And a belief that the institutions involved here can effectively absorb these further increases.

Mr. MARSHALL. I appreciate the problem of being general in this regard.

DWARFISM IN CATTLE

You propose to spend additional funds on the problem of dwarfism in cattle, for example. That is the same thing you had on page 84 of last year's notes. It might give us a more thorough understanding if you just directed your attention to that specific item.

Dr. ELTING. That is an item causing very great concern throughout the beef cattle area of our Nation. It is one that is a very integral part of our regional investigation in beef-cattle improvement through breeding and selection. We did mention that a year ago as an acute problem. It would take a search to tell you how much of our 1955 increase went into that problem. I will provide that figure if you want it. It was considerable. We are still saying that this year we believe there is still greater effort needed in this whole question of beef-cattle improvement, of which dwarfism is one very serious problem.

ADVANCE PLANNING OF RESEARCH

Mr. WHITTEN. Dr. Elting, in the justification to the Bureau of the Budget for an increase this year, isn't it a fact that actually you requested the additional money and then set out to find some use for it? You didn't request this increase of the Bureau of the Budget and spell out to them the specific projects that the States could not now meet and for which they had to have this money, did you?

Dr. ELTING. May we give you certain exhibits in response to that question, Mr. Chairman? They are not wholly specific and yet they indicate a considerable amount of advance planning in this subject on which you have raised a question.

Last summer, some 6 months ago now, in cooperation with a committee of the experiment station section of the Land Grant College Association, every experiment station director gave us in detail some of the more critical problem areas in his State, based not only on his judgment but on the judgment of advisory committees, State farm organizations, and others that consult with the experiment station director in the formulation of programs.

We have expressed, first, a very broad breakdown of the totals that came from all the States, that is reflected in a table showing the increase by subject matter, and an estimation of the additional manpower that it would take to put this program into effect.

Beyond that, we have made a listing—and I refer to this list that does not contain any figures, but simply indicates subjects in each of the several States that have been indicated as the area in which they would place major emphasis, if further increases were allowed.

Mr. WHITTEN. There are very few places where they are not already doing quite a lot of work with regard to each of the projects you have listed here. So what it amounts to is the increase of money for the same projects they are carrying on now.

Dr. ELTING. For the same general problem areas, but involving specific new projects. When I say "projects" I mean reducing these problems to much narrower limits than suggested in these terms.

Mr. WHITTEN. Will you give us a list of those new phases of the same project, then? Do you have any listing of that?

Dr. ELTING. That is essentially right. It would deal with new phases of these problem areas.

Mr. WHITTEN. That's right, but you were not supplied with what the new phase was, so you could see if it was really a new phase.

Dr. ELTING. Not specifically, at this time. It has not been reduced to the specific line project form.

Mr. WHITTEN. Then it does leave it so that work would be selected after they get their money, rather than selecting the line project and submitting it to you so you could compare it with things already being done.

Dr. ELTING. That's right. We have no specific work plans available to sustain this justification.

Dr. KNOBLAUCH. The part that you are looking at, the regional research program, represents advance planning of regional groups and within those groups they have considered the details of what each State will do under this expanded program. Currently the regional research program represents approximately 50 percent of the use of these increased funds, so there is that much detailed, advance planning which has gone into the specific areas that will be undertaken.

RESEARCH IN BEEF CATTLE BREEDING

Mr. WHITTEN. The reason I ask that is that I have learned through the years how very hard it is, not only for us on this committee who know little about it, but also for you folks on that side of the table, to keep duplications out and keep less essential work from creeping in.

When we say "Animal production, beef cattle breeding," everyone knows that is something very worth while and we have to spend a lot of money to carry it on. We on the committee know we carry on research in animal breeding in Beltsville and throughout the Federal establishment.

Now, when we see in 1955 we had $169,500 for that purpose, it isn't always easy to understand that $30,000 more for that same purpose is essential. I am not saying that it is not. But at this state of the record there is nothing to show whether it is or not. One of the problems you have with researchers is to finish one line project and move to another. The tendency is to keep piling line projects on top of each other. We have had some examples here, where the same thing went on for 20 years without any special progress being made on it whatsoever. For example, in connection with swamp fever, the only thing that the Department of Agriculture did in the years that I have been here was to make an investigation. It is a wonder that they didn't find the cure earlier. The cure was the tractor. Each year it was the same money and the same people. Some people like to think politics is a secure means of livelihood, and those under Civil Service like to think the same, but, if you have something like swamp fever, I think that is a most secure way to have a good income indefinitely.

Dr. ELTING. Our answer to that, Mr. Chairman, is the figures I read into the record a moment ago, showing that we do have a turnover of about 20 percent each year, so there is a reasonable rate of completion and initiation of new work under this program.

Mr. WHITTEN. I realize that. But tell me the ones they have quit on beef cattle breeding.

Dr. ELTING. There have been contributions, public results, Mr. Chairman.

Mr. WHITTEN. They found answers and published them. But they never get finished.

Dr. ELTING. That's true, and some of those things are being put to work.

Out of this study came the finding that the rate of gain in beef cattle is a highly inheritable characteristic. Out of that has come the program of putting young bull calves in the feed lot for 60 or 90 days under standard feeding conditions, measuring their rate of gain, and their own performance gives a pretty good key to their transmitting ability.

Now, that single finding is tending, I think, to—

Mr. WHITTEN. We recognize the value of that. We just wonder when you get through, and whether the same people couldn't move to the new problem instead of having to have $30,000 additional money.

Dr. ELTING. Some of both is happening, Mr. Chairman. There is no doubt that phases of this have been written off and other new work started and certainly whether the $30 thousand is appropriate, or not, that program is going ahead with all the resources they have behind it, and certainly we will continue to finish certain phases of it;

Mr. WHITTEN. As I said earlier Congress gave a large increase in these payments last year. Again, you ask for an equal amount of increase this year, in the name of research.

In considering the overall budget, if this increase is granted, it will have to be at the expense of programs which others feel are equally sound. That is what we are up against.

It is so unpopular to hold down anything that is asked for in the name of research that we must point out some of the places in the research field where the work is not as important as in others. We have to do that, if we are going to balance these things all out under the overall ceiling of the budget.

INCREASED BUDGET FOR RESEARCH

Mr. MARSHALL. Dr. Elting, I have been going over these items on a year-to-year basis. Can we look forward to an increase of $5 million or more each year from now on?

Dr. ELTING. I couldn't predict that with accuracy, Mr. Marshall. Thus far, we have been following as a guide the specific authorizations which were contained in the amended Bankhead-Jones Act which specified increases of $5 million a year for 4 consecutive years, until we had expanded this program by $20 million.

Actually, in 1955, out of that $20 million authorization, $11.5 million has been appropriated. The $5.3 requested in this year's budget would bring that total to $16.8 million. Another $3.2 million would realize the full authorization which the Congress specifically authorized.

Mr. WHITTEN. Do you have any idea, Dr. Elting, as to how much our total annual appropriations would be, if we were to appropriate for all existing authorizations for appropriation?

Dr. ELTING. No, sir; I must admit I have little idea.

Mr. WHITTEN. I wouldn't profess to say, but it would run many times the present Federal budget.

Now, in this field we all agree that we want the work done. But the point I make is that authorizations merely represent what is permissible. The committee should make the appropriations, after considering these factors: The absolute need, the use of the funds, getting a dollar's worth of value, and the national debt.

Dr. ELTING. I was attempting to state as to further increases for which our authorizations provided certain guides. I think that the Congress will have to give careful attention to the total volume of research that is warranted in relation to the industry which we are serving.

There is one point, if I may take a moment to develop it, which I think is significant, and that is the true beneficiary of this research. It is commonly said we are working primarily for the farmer's interest, but Dean Meyer, of Cornell, made a point recently which I think bears repeating, his point being that we give the farmer a certain advantage the first year or two that he accepts a new finding, but actually the farmer who does not accept that new finding within a year or two is at a very definite disadvantage. In the long run what we are doing then, is to endeavor to guarantee a much more adequate total food supply that benefits every consumer in the Nation, rather than specifically improving the lot of the farmer, which I think may not be as widely recognized as it should be.

OFFICE OF EXPERIMENT STATIONS

Mr. MARSHALL. Dr. Elting, how much are you requesting for the Office of Experiment Stations here in Washington?

Dr. ELTING. The support to the Office comes from two sources. A part comes from "Salaries and expenses." The other is the provision of the law which says that 3 percent of the Bankhead-Jones, section 9, funds shall be available for administration of those funds. There is a requested total of $681,000 for next year, composed of a $177,000 allotment from the "Salaries and expenses" item, plus the 3 percent of the section 9 funds, or $504,000.

Mr. MARSHALL. As compared with how much in the last fiscal year?

Dr. ELTING. $177,000 plus $345,000 of section 9 funds for the current year, a total of $522,000. So there is an increase, there, of $159,000. It is 3 percent, sir, of the increase in this year's budget which is automatically by law allowed for the administration of the fund.

INCREASE FOR VIRGIN ISLANDS RESEARCH STATION

Mr. WHITTEN. My attention has been called to an increase of $25,000 for the Virgin Islands. What is that?

Dr. ELTING. The $25,000 requested for the Virgin Islands is to permit a modest expansion of the program which has been underway there for 3 years under the provisions of Public Law 228, of the 82d Congress.

During the 3 years we have operated, we have been able to initiate work primarily in the improvement of crops of various types that are adapted to the Virgin Islands, and to extend information on them to farmers. Specifically, the $25,000 would be used to expand our pro-

gram there in the livestock field. After all, beet-cattle production is second only to sugarcare as a source of island income. Thus far, we have devoted our efforts very largely in the food crop and the forage crop fields but we have been unable to hire an animal husbandman, or to develop improved practices in livestock production.

We are sufficiently encouraged by the response that is occurring in the Virgin Islands, to requsst this committee to grant a small increase in that program which, you will recall, was discussed very frankly some 3 years ago as to what we might hope to accomplish in improving the welfare of the island.

There is evidence that we are getting a good response from the rural people to this program. We have not been able to reach as many people as we would like—that is, with the amount of extension work that we feel is warranted—and that will definitely be a major part of the increase that is proposed.

In connection with the overall activity in the Virgin Islands, I would like to report that the local government has just established a department of labor and agriculture as a part of their total function there. We are encouraged that the local government is showing a willingness to put more local funds into a program dealing with their local agriculture. We look forward to an effective cooperation with that new department of the local government.

That is essentially our justification for that increase, Mr. Chairman.

Mr. WHITTEN. Dr. Elting, we have appreciated your appearance here. And I wish to say, particularly in view of the line of our questions, that we do feel that you do a fine job. Under the system that is available to you under the law, we personally feel certain that you exercise every care that you can, and we wish to commend you for that effort.

We wish to thank you. It is always a pleasure to have you with us.

Dr. ELTING. Thank you, Mr. Chairman. We appreciate the courteous treatment which we have had here.

AVAILABILITY OF PERSONNEL

I would like to leave with you a compilation we have on the prospective manpower which will be available from our colleges and graduate schools. Would you be interested in having that filed with the committee?

Mr. WHITTEN. I think that should be put in the record.

Dr. ELTING. If we may, sir, we would like to do that.

Thank you.

(The document referred to follows:)

AVAILABILITY OF SCIENTIFIC PERSONNEL

The research increases for the Department and for the State agricultural experiment stations reflected in the budget will require some 770 scientific professional personnel. The graduates of our land-grant colleges, in agriculture and home economics, and the young scientists with advanced degrees from the graduate schools of the same institutions comprise the primary pool of manpower from which suitable personnel for the program can be recruited. We have asked the land-grant colleges to furnish us, by research subject matter category, the numbers of senior and junior scientists that would be available in the next 3 years. As is indicated by the attached table, between 6,000 and 7,000 individuals are receiving their bachelor of science degrees in agriculture, and over 3,000 are graduated in

home economics each year. The graduate schools of the land-grant colleges yield over 2,000 with master's degrees and over 1,000 new doctors of philosophy each year. In addition to the figures shown in this table, there will be scientific graduates from other colleges and universities. Either directly or by providing replacements in other areas of recruitment, this annual crop of new graduates should meet the manpower needs of the expanded program.

Scientific personnel needed to implement increases included in the 1956 Budget estimates

Area of investigation	Department	Payments to States	Total
Field and forage crop production	29	68	97
Horticultural crop production		26	26
Forest production and management		12	12
Plant diseases and insects	43	48	91
Animal, dairy, and poultry husbandry	22	73	95
Livestock diseases and parasites	20	45	65
Soils, irrigation, conservation, and management	47	55	102
Farm mechanization and structures	6	30	36
Economics of production	13	33	46
Human nutrition, home management, and family living		29	29
Utilization of agricultural products	22	5	27
Marketing of agricultural products	35	106	141
Total	237	530	767
By appropriations:			
Payments to States, Hawaii, Alaska, Puerto Rico		530	530
Salaries and expenses, Agricultural Research Service, research subappropriation	166		166
Salaries and expenses, Forest Service, forest research subappropriation	36		36
Marketing research and service	35		35
Total	237	530	767

Graduate and undergraduate students at agricultural institutions expected to receive degrees in 1955, 1956, and 1957

Research category	Doctor of philosophy, number			Master of science degree, number			Bachelor of science, number		
	1955	1956	1957	1955	1956	1957	1955	1956	1957
Economics of production, rural life studies	78	78	105	190	219	252			
Marketing	40	50	60	114	139	170			
Utilization (including forest products)	87	95	102	117	127	146			
Agricultural engineering	15	21	25	103	122	159			
Animal and poultry husbandry	182	198	212	349	363	445			
Animal diseases and parasites	54	51	67	82	73	84			
Field crop production	86	100	125	182	174	193			
Horticultural crop production	67	73	87	110	135	138			
Farm forestry production	14	14	18	63	58	81			
Soils and plant nutrition	115	115	147	139	164	194			
Botany and plant pathology	112	141	151	116	125	154			
Entomology	94	108	128	180	208	234			
Subtotal	944	1,044	1,227	1,745	1,907	2,250	6,113	6,565	6,809
Human nutrition and home economics	47	58	70	299	347	408	3,186	3,360	3,603
Total	991	1,102	1,297	2,044	2,254	2,658	9,299	9,925	10,412

RESEARCH ON STRATEGIC AND CRITICAL AGRICULTURAL MATERIALS

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$439,500	$331,500	$300,000
Reimbursements from other accounts	4,900		
Total available for obligation	444,400	331,500	300,000
Unobligated balance, estimated savings	−3,362		
Obligations incurred	441,038	331,500	300,000

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
1. Research on domestic production of natural rubber	$107,498		
2. Investigations of domestic production of vegetable tannins	103,570	$104,000	$72,500
3. Investigations on vegetable fats and oils	114,029	116,000	116,000
4. Investigations on fiber plants	111,041	111,500	111,500
Total direct obligations	436,138	331,500	300,000
Obligations Payable Out of Reimbursements From Other Accounts			
1. Research on domestic production of natural rubber	4,900		
Obligations incurred	441,038	331,500	300,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Summary of Personal Services			
Total number of permanent positions	68	45	43
Full-time equivalent of all other positions	18	5	5
Average number of all employees	82	48	42
Number of employees at end of year	70	46	44
Average salaries and grades:			
General schedule grades:			
Average salary	$4,548	$4,887	$4,943
Average grade	GS–6.4	GS–7.2	GS–7.3
Ungraded positions: Average salary	$3,431	$3,693	$3,699
Personal service obligations:			
Permanent positions	$276,872	$191,750	$167,950
Positions other than permanent	44,264	23,900	23,900
Regular pay in excess of 52-week base	843	650	550
Payment above basic rates	65		
Total personal service obligations	322,044	216,300	192,400
Direct Obligations			
01 Personal services	321,621	216,300	192,400
02 Travel	10,514	9,400	9,300
03 Transportation of things	6,423	5,400	3,200
04 Communication services	1,395	1,100	1,100
05 Rents and utility services	16,079	15,000	14,000
06 Printing and reproduction	395	800	800
07 Other contractual services	23,586	18,100	16,900
Services performed by other agencies	11,739	29,500	27,900

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
Direct Obligations—Continued			
08 Supplies and materials	$26,282	$24,700	$24,100
09 Equipment	16,936	9,900	9,100
10 Lands and structures	950		
15 Taxes and assessments	1,701	1,300	1,200
Subtotal	437,621	331,500	300,000
Deduct charges for quarters and subsistence	1,483		
Total direct obligations	436,138	331,500	300,000
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	423		
03 Transportation of things	34		
05 Rents and utility services	2,075		
07 Other contractual services	1,430		
08 Supplies and materials	938		
Total obligations payable out of reimbursements from other accounts	4,900		
Obligations incurred	441,038	331,500	300,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$84,804	$42,468	$28,968
Obligations incurred during the year	441,038	331,500	300,000
	525,842	373,968	328,968
Adjustment in obligations of prior years	−2,951		
Reimbursements	−4,900		
Obligated balance carried to certified claims account	−2,053		
Obligated balance carried forward	−42,468	−28,968	−26,968
Total expenditures	473,470	345,000	302,000
Expenditures are distributed as follows:			
Out of current authorizations	395,219	305,000	275,000
Out of prior authorizations	78,251	40,000	27,000

Mr. WHITTEN. We turn now to research on strategic and critical agricultural materials.

I will ask that the material in the justification be incorporated in the record at this point.

(The material referred to is as follows:)

PURPOSE STATEMENT

The Strategic and Critical Materials Stock Piling Act of July 23, 1946, in section 7 (b), authorizes and directs the Department of Agriculture to make scientific, technologic, and economic investigations of the feasibility of developing domestic sources of supplies of any agricultural material or substitutes for such materials determined by the Office of Defense Mobilization to be strategic and critical. This appropriation is for the purpose of enabling the Department to carry out its responsibilities under that act.

This program is administered by the Agricultural Research Administrator. The Office of Defense Mobilization, however, recommends or approves investigations to be undertaken. Investigations are at present being conducted on tannin, vegetable fats and oils, and materials for cordage.

Appropriated funds:

Appropriated, 1955	$331,500
Budget estimate, 1956	300,000

Research on strategic and critical agricultural materials

Appropriation act, 1955, and base for 1956	$331,500
Budget estimate, 1956	300,000
Decrease (due to anticipated completion of certain phases of investigations with vegetable tannins)	−31,500

Project statement

	1954	1955 (estimated)	Decrease	1956 (estimated)
1. Research on domestic production of natural rubber	$107,498			
2. Investigations of domestic production of vegetable tannins	103,570	$104,000	[1]−$31,500	$72,500
3. Investigations on vegetable fats and oils	114,029	116,000		116,000
4. Investigations on fiber plants	111,041	111,500		111,500
Unobligated balance	3,362			
Total appropriation or estimate	439,500	331,500	−31,500	300,000

DECREASE

[1] *A decrease of $31,500 due to anticipated completion of certain phases of investigations with vegetable tannins*

For fiscal year 1955, utilization studies on certain phases of investigations with vegetable tannins, including production of 10 tons of tannin for use in experimental tanning studies, will cost $56,000. It is anticipated that the tannin production objective will be attained by July 1, 1955. In conducting this work, however, it became apparent that certain additional research data would be needed to formulate a commercially feasible process in view of processing difficulties experienced with roots of the new, high-tannin varieties of canaigre being provided by the Field Crops Research Branch. It is estimated that $24,500 will be required for fiscal year 1956 for this phase of the research, a reduction of $31,500 from funds available in 1955.

STATUS OF PROGRAM

This appropriation enables the Department of Agriculture to carry out its responsibilities under the Strategic and Critical Materials Stock Piling Act of July 23, 1946. This act authorizes and directs the Department to make scientific, technologic, and economic investigations of the feasibility of developing domestic sources of supplies of any agricultural material or substitutes for such materials determined by the Office of Defense Mobilization to be strategic and critical. Investigations are undertaken only upon recommendation of the Office of Defense Mobilization.

Current activities include research on domestic production of tannin, strategic oils, and fiber plants, as follows:

1. Tannin investigations are devoted to the possible production of tanning materials from crops that can be produced in the United States, especially from canaigre, a desert crop grown in the southwestern United States. Experimental plantings have been established in Arizona, New Mexico, and Texas. Production problems encountered in growing this crop on a semicommercial scale are being studied. A pilot plant has been designed and installed for preparation of the canaigre tanning extract on a scale large enough to permit commercial evaluation by its use in the production of experimental lots of heavy leather.

2. Current work on strategic oils is devoted to problems encountered in the expansion of castor-bean production into new areas to meet the increased demands for castor oil and to the development of superior varieties adapted to growing and mechanical handling in new areas of production.

3. Studies in the field of strategic cordage are directed toward problems encountered in developing the domestic production of hard fibers and hard-fiber substitutes (sansevieria, phormium, and hemp) that can be used for such purposes as lines and ropes on naval vessels, and of kenaf, a soft fiber with qualities similar to jute. Agronomic research is conducted on breeding, disease, and quality problems, and engineering research on the development of improved planting, harvesting, and handling equipment.

Selected examples of recent progress

1. *Research on domestic-rubber production.*—Production research on natural rubber-bearing plants, particularly on the development of improved strains of guayule, was discontinued at the close of fiscal year 1954. The research was initiated under this appropriation in fiscal year 1948, and has resulted in the development and testing of new guayule selections that yield 25 to 50 percent more rubber than the best strains available during World War II. New germ plasm has been isolated for possible use in a future breeding program. It has the potential of contributing still higher yields of rubber and greater disease resistance.

In order to preserve as much as possible of the production research results to date, the most desirable strains of guayule developed in the breeding program were established in standby plantings, which will be maintained under the appropriation "Salaries and expenses, Agricultural Research Service." Small standby plots for preserving the plant material were established at the Winter Haven substation of the Texas Agricultural Experiment Station and at the Federal station at Salinas, Calif. The present stockpile of guayule seed of approximately 17,000 pounds will also be preserved in the standby program. The seed will be tested periodically for viability and moisture content, and recommendations relative to its storage will be made to GSA Emergency Procurement Services.

2. *Tannin investigations.*—This research is concerned with the production of canaigre as a source of tannin and with full-scale tannery evaluation of the tannin produced from canaigre roots. To obtain improved selections with high tannin content, more than 100 types of canaigre from wild collections were grown at Mesa, Ariz., and evaluated in a 4-year program. Tannin content ranged from 23 percent to 42 percent, and similar wide variations occurred in other plant characteristics. One strain of canaigre, named Salt River, has been found outstanding. It has a desirable root shape, satisfactory yield, and good disease resistance. It is superior for processing because of good leachability and high tannin purity. This new strain is being increased to replace the common strains now grown for tannin. In 1954, 16 tons of this strain were available for processing. It had about 36 percent tannin of 63 percent purity as compared to 28 percent tannin of 60 percent purity for previous bulk lots.

A canaigre harvester has been developed and used successfully to harvest approximately 150 tons of roots in 1953 and 200 tons in 1954. Altogether, about 600 tons of roots have been shredded and dried since the first harvest in 1951 and made available for experimental processing and tannin evaluation studies. Canaigre tannin sufficient for full-scale tannery evaluation is being prepared from the roots and it is expected that the goal of 10 tons of extract required for evaluation purposes will be available by December 31, 1955. The evaluation will be made in cooperation with the Quartermaster Corps.

3. *Castor-bean production.*—Because of the favorable performance of hybrid castor beans in experimental and commercial plantings since 1952, research work has emphasized the development of improved hybrids. The finding of two breeding lines, USDA 49 and Brazilian 330 crossed with Nebraska 145–4, which produce completely pistillate (female) flowers opens the way for cutting the cost of hybrid seed production by about half, since the hand labor formerly required for roguing (equivalent to detasseling in hybrid-corn production) will be greatly reduced.

A new disease of castor beans, bacterial leaf spot, was first reported in 1952. In 1953 it caused losses estimated as high as 50 percent in parts of Oklahoma and Texas. The widely grown Conner variety, tracing to the female line Nebraska 145-4, proved to be extremely susceptible. Other commercial varieties and many breeding lines have also shown moderate to high susceptibility. The Cimmaron variety, however, was found to have considerable resistance to this disease. It is now being used in the breeding program to develop resistant varieties and hybrids. Search is also being made for additional sources of resistant germ plasm.

A compact huller-cleaner was developed which could be mounted into the castor-bean harvester. Combining the hulling and harvesting operations in one machine reduces costs and permits the spreading of castor-bean hulls, which have appreciable plant food value, back on the land.

4. *Investigation of fiber plants.*—Research on the production of Sansevieria, one of the few hard fibers that can be produced in the United States as a substitute for abaca (Manila hemp), has developed some new hybrid varieties and selections, which give significantly higher yields. Fertilizer research has shown that, on the sandy soils of south Florida, increasing applications up to 1,000 to 1,200 pounds per year of a complete fertilizer gives progressively higher yields and results in

plants of greater cold tolerance. To provide an adequate supply of Sansevieria for study of production, harvesting, and decorticating machinery problems and costs of production, arrangements have been made for the use of 50 acres of State-owned land in south Florida. The land has been cleared, drainage and irrigation facilities have been installed, and 10 acres have been planted. Additional plantings of 10 acres each will be made over a 4-year period.

Selections of Kenaf have been found that are resistant to anthracnose blight, which has caused serious losses to commercial production. Seed stocks of the resistant selections are being increased for release for commercial production.

Mr. WHITTEN. We will be glad to have any presentation you might care to make.

GENERAL STATEMENT

Dr. IRVING. Thank you, Mr. Chairman. As you know, the research in this item is conducted under authority of the Strategic and Critical Materials Stockpiling Act of July 23, 1946. In this work we do research in the Department on projects that are discussed with and have the recommendations and approval of the Office of Defense Mobilization. That is the case with the projects that are now before you. We have discussed these projects with them and they have been recommended to us and approved by the Office of Defense Mobilization as reasonable projects in view of our strategic and critical materials needs.

There are, as you see, three projects involved under this item. They concern investigations on domestic production of vegetable tannins, vegetable fats and oils, and fiber plants.

RESEARCH ON VEGETABLE TANNINS

There is one change over the current year proposed in the 1956 budget. This concerns part of the work on vegetable tannin. I will be glad to discuss that change if you wish me to do so.

The work on tannins is done in two parts of the Agricultural Research Service. One part is conducted by the Field Crops Research Branch on the selection of strains of canaigre better suited to harvest and production of tannin; the second part is conducted in the Eastern Utilization Research Branch at Philadelphia where the studies are concerned with the extraction or removal of tannin from the canaigre root, and the development of processes whereby this extraction can be accomplished. It is in the latter area of work that the reduction of $31,500 is proposed. The aspect of the work which would be stopped with the end of this fiscal year would be the production of a large quantity of tannin looking toward the evaluation of this tannin for use in the production of experimental lots of heavy leather. We will have accumulated the necessary amount of tannin by the end of this fiscal year and have it available for evaluation by the Quartermaster Corps.

The other work, both on the improvement of canaigre varieties, and on the development of improvements in the method of processing will be continued.

Work on the other projects will be continued about as this year.

ACCOMPLISHMENTS

Mr. WHITTEN. What progress are you making? I think this committee clearly recognized the value of investigations on fats and oils and on fiber plants as well. But I notice that in the coming fiscal year you request the same amount of money and the same number of employees. I wonder what progress, what advances you are making? Are you getting any answers, making any improvements? How long will this be continued unless you do come up with some concrete results?

RESEARCH ON CASTOR BEANS

Dr. IRVING. We believe we are making steady improvements in all three fields. To discuss the field of vegetable fats and oils, where we are working on the development of better castor-bean varieties, we are emphasizing work on hybrids, and have made discoveries during the past year that probably will reduce considerably the hand labor required to produce seed. We have also made improvements in machinery for hulling and cleaning castor beans so that the cost of production of the bean will be reduced. The reduction in cost of production is perhaps the prime factor, in the case of castor beans, which will determine whether this can be or will be a domestic crop or whether it will remain a crop potentially growable in the United States and available for emergency.

RESEARCH ON VEGETABLE FIBERS

In the case of fiber work, essentially the same situation obtains in that we are developing better strains of Sansevieria, of phormium, and of the soft fiber plant, kenaf. In two of these cases, we are now producing material for evaluation as cordage and will have a considerable body of information available for use in case we need it in emergency.

In the case of the canaigre work, recent research has resulted in developing a so-called Salt River variety of canaigre which contains 36 percent tannin as compared with 28 percent in the best varieties produced in prior years.

There is real progress, we feel, being made in each of these fields.

Mr. WHITTEN. Dr. Irving, we wish to thank you for your presentation.

SOIL CONSERVATION SERVICE

FRIDAY, FEBRUARY 11, 1955.

WITNESSES

ERVIN L. PETERSEN, ASSISTANT SECRETARY OF AGRICULTURE
D. A. WILLIAMS, ADMINISTRATOR, SOIL CONSERVATION SERVICE
GLADWIN E. YOUNG, DEPUTY ADMINISTRATOR, SOIL CONSERVATION SERVICE
W. R. VAN DERSAL, ASSISTANT ADMINISTRATOR, MANAGEMENT, SOIL CONSERVATION SERVICE
CHARLES E. KELLOGG, ASSISTANT ADMINISTRATOR, SOIL SURVEYS, SOIL CONSERVATION SERVICE
J. C. DYKES, ASSISTANT ADMINISTRATOR, FIELD SERVICES, SOIL CONSERVATION SERVICE
CARL B. BROWN, DIRECTOR, PLANNING DIVISION, SOIL CONSERVATION SERVICE
CARL H. DORNY, DIRECTOR, BUDGET AND FINANCE DIVISION, SOIL CONSERVATION SERVICE
W. S. SWINGLER, ASSISTANT CHIEF, FOREST SERVICE
W. T. MURPHY, CHIEF, DIVISION OF FLOOD PREVENTION AND RIVER BASIN PROGRAMS, FOREST SERVICE

Mr. WHITTEN. The committee will come to order. We will take up the Soil Conservation Service at this time.

We'll be glad to first hear from Mr. Peterson, Assistant Secretary of Agriculture.

GENERAL STATEMENT

Mr. PETERSON. Mr. Chairman and members of the committee, under departmental organization the Soil Conservation Service falls within the jurisdiction of the Assistant Secretary for Federal-States Relations.

The Department of Agriculture recognizes a nationwide program of soil and water conservation as one of the essentials of American agriculture. Our soil and water resources are the foundation blocks for our entire economy. From these resources must come most of the food, the clothing, and much of the shelter for a rapidly expanding population. How well we protect and improve these resources in the years ahead will have a direct bearing on the standards of living enjoyed by all the people of this Nation. In periods of abundance we must not lose our perspective with regard to the necessity for going forward aggressively with conservation and improvement of our soil and water resources and with research and education on which our efficiency rests.

RESPONSIBILITIES OF SOIL CONSERVATION SERVICE

Soil and water conservation efforts in the Department of Agriculture consist of several phases, including research, education, technical assistance, credit, and cost-sharing.

The SCS is responsible for the technical assistance phase of this activity. This technical assistance phase involves soil surveys, assisting farmers and ranchers and watershed interests in the development of their soil and water conservation plans, on-site aid in the

application of conservation measures, and specialized guidance in maintaining the farm conservation systems. The Soil Conservation Service also provides technical and financial assistance to local organizations in watershed protection and flood prevention.

The Department believes wholeheartedly in teamwork and full cooperation among the various agencies concerned to make these various phases of effort mesh smoothly into one total conservation program for the Department. Other work supporting conservation functions includes certain research work of the Agricultural Research Service, that part of the Extension Service functions that provides conservation-educational assistance, certain functions of the Farmers' Home Administration that provide credit for soil conservation and water facilities on farms and ranches, and conservation cost-sharing under the agricultural conservation program. I am pointing out these related conservation functions to emphasize the fact that I expect to see this coordinated effort continue to give even greater emphasis to conservation and to give improved service to farm people in whose hands the major task of conservation lies.

Within this setting of coordinated conservation effort, the Soil Conservation Service has the responsibility of acting as the technical service agency in the fields of soil and water conservation, watershed protection, and flood prevention.

To assure maximum participation of farmers in planning and programing the nationwide soil and water conservation effort, the Secretary of Agriculture has entered into a memorandum of understanding with 2,615 soil conservation districts and provide assistance in carrying on soil conservation work.

We believe the Watershed Protection and Flood Prevention Act fills a significant gap in the Department's programs relating to water management and soil conservation. It deals with water management measures that are beyond the abilities of individual farmers but are needed to relate farmers' soil and water conservation measures with those that involve the watershed community. It has required a considerable amount of time to work out the procedures for carrying out the responsibilities under this act. Since the first of the year, we have authorized the initiation of planning in 34 watersheds in 19 States. We anticipate that planning work will be initiated in watersheds in additional States as the State and local governments find ways of meeting the requirements of the act. The Department has assigned to the Soil Conservation Service responsibility for leadership in the administration of the program under this new act.

Now, Mr. D. A. Williams, Administrator of the Soil Conservation Service, is here to present a more detailed statement with respect to the budget estimates for the SCS.

Mr. WHITTEN. Thank you, Mr. Peterson.

On this committee we certainly concur in the views you have expressed. We have a long record of which we are very proud, and we have tried to stress the need for the support Congress should give to these programs.

SUMMARY JUSTIFICATION DATA

It is with that background that we go into the details of just how the budget provides for these activities. At this point in the record we

will insert pages 202 through 204, 206, 207, and 210 through 225 of the justifications.

(The material is as follows:)

PURPOSE STATEMENT

The Soil Conservation Service was established by the act of April 27, 1935 (16 U. S. C. 590a–590f). It assists soil conservation districts and other cooperators in providing technical aid to farmers and ranchers in bringing about physical adjustments in land use that will conserve soil and water resources, provide economic production on a sustained basis, and reduce damages by floods and sedimentation. The Service also develops and carries out special drainage, irrigation, flood prevention, and watershed protection programs in cooperation with soil conservation districts, watershed groups, and other Federal and State agencies having related responsibilities.

Conservation operations program activities

The Service provides technical and other assistance to farmers, ranchers, and others through soil conservation districts and other cooperators in the 48 States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands, in carrying out locally adapted soil and water conservation programs. (As of June 30, 1954, farmers and ranchers had organized 2,618 conservation districts.) The assistance furnished by the Service includes (*a*) making soil surveys to provide physical land facts needed to determine the use capabilities and conservation treatment needs of each acre of farm and ranch land and the publishing of soil survey reports and maps which are useful also to other Federal and State agencies and the public in the development of special land-use programs and for other purposes, (*b*) technical assistance in developing and applying conservation farm and ranch plans which allow for the best possible use by the farmer or rancher of his land, labor, equipment, and financial resources, (*c*) the loan of some special types of equipment not readily available to the farmer but needed to establish certain conservation practices, (*d*) observational studies and field testing of new and improved species and strains of grasses and legumes, trees, shrubs, and other plant materials that may be useful in controlling erosion and improving pasture and range land, and (*e*) making of snow surveys and streamflow forecasts in the Western States to provide for efficient seasonal utilization of available water supplies.

Watershed-protection program activities

The Service has general responsibility for administration of the watershed-protection program of the Department, and the formulation and development of its guiding principles and procedures. The program consists of (*a*) completing the installation in 60 heretofore specifically designated small watersheds located throughout the country, pilot demonstrations of the effectiveness of watershed-improvement programs in retarding runoff and waterflow, conserving soil and preventing erosion, and reducing upstream flood and sediment damage, and (*b*) cooperation with States and local public agencies in planning and installing in small upstream watersheds works of improvement designed to prevent erosion, floodwater, and sediment damage, and to further the conservation, development, utilization, and disposal of water.

In cooperation with soil-conservation districts and other local groups and organizations, the Soil Conservation Service provides technical assistance to farmers and ranchers in these small watersheds in the planning and application of soil- and water-conservation practices and technical and financial assistance in the planning and installation of water and erosion-control measures such as diversion ditches and dikes, waterflow-retarding structures, debris and desilting basins, stream-channel improvements, floodways, gully control structures, roadside-stabilization measures, etc. The Forest Service participates, generally by cooperating with State foresters, in planning and providing fire protection and furnishing technical forestry assistance to landowners in applying forest and woodland-improvement measures on non-Federal lands and by installing all measures on lands under its administration. The Agricultural Research Service furnishes assistance in the assembly, correlation, and analysis of economic data needed in the planning phases of the program.

Flood-prevention program activities

Pursuant to the Flood Control Act of June 22, 1936, as amended and supplemented, and under policies established by the Secretary, the Service has general

responsibility for administration of the flood-prevention program of the Department, and the formulation and development of its guiding principles and procedures. Since the passage of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Cong.) the program consists of the planning and installation of improvement measures primarily for flood prevention on the 11 authorized watersheds.

The Soil Conservation Service prepares detailed subwatershed work plans and installs works of improvement such as floodwater retarding structures, stream-channel improvements, gully stabilizing, and sediment control measures, diversions, floodways, etc., on the 11 authorized watersheds. The improvement measures are installed in cooperation with local soil-conservation and flood-control districts and other local and State agencies.

The Forest Service carries out similar flood-prevention activities on national forests and adjacent range lands and on other forest lands within the authorized watersheds.

The Soil Conservation Service participates, with the assistance of the Forest Service, the Agricultural Research Service, other agencies of the Department, and with other Federal and State agencies concerned, in planning comprehensive resource development programs for river-basin areas.

Water conservation and utilization program activities

Under the authority of the acts of May 10, 1939 (53 Stat. 685, 719), October 14, 1940 (16 U. S. C. 590–z–10), as amended and supplemented, June 28, 1949 (Public Law 132) and September 6, 1950 (Public Law 760) the Service carries on a water conservation and utilization program in specific project areas. Irrigated and irrigable land (both Government and privately owned) are developed for efficient use of irrigation water. Settlement opportunities are provided for veterans and needy farm families through the sale of developed farm units. Technical assistance is furnished to settlers within the authorized project areas with their soil and water conservation and land-use problems. This work is being conducted on the two remaining active projects in South Dakota and Wyoming.

The Soil Conservation Service maintains its central office in the District of Columbia, with the majority of its activities highly decentralized to 46 State and 3 Territorial offices, and more than 3,300 area and work unit offices which carry on the technical programs in conservation districts, watersheds, and water conservation and utilization projects.

As of November 30, 1954, the Soil Conservation Service had 11,693 full-time employees (219 in Washington and the balance in the field) and 2,312 part-time employees who are generally employed in the field during the seasonal periods when there is need for additional assistance in applying conservation practices.

	Appropriated, 1955	Budget estimate, 1956
Appropriated funds:		
Conservation operations	$57,568,579	$55,696,200
Watershed protection	7,210,000	11,000,000
Flood prevention	9,195,292	8,700,000
Water conservation and utilization projects	480,000	
Total	74,453,871	75,396,200

Conservation operations

Appropriation Act, 1955	$59,085,671
Activities transferred in the 1956 estimates to:	
"Flood prevention, Soil Conservation Service" for additional measures to accelerate flood prevention	−1,513,292
"Salaries and expenses, Office of Information, Agriculture", for news-type photographic services	−3,800
Base for 1956	57,568,579
Budget estimate, 1956	55,696,200
Decrease	−1,872,379

Summary of decreases, 1956

Decrease due to elimination of some area offices in States where it is practicable to adjust area boundaries or where administration and supervision of work units can be handled more effectively and efficiently from the State office	−$600,000
Decrease due to simplification and standardization of cartographic techniques and procedures, and possible consolidation of some facilities	−500,000
Decrease due to reassignment of personnel to work on other SCS programs and consolidation of some work units	−752,379
Decrease due to adjustment in nursery operations in line with discontinuance of plant production work	−20,000

Project statement (on an available-funds basis)

Project	1954	1955 (estimated)	Increase or decrease	1956 (estimated)
1. Assistance to soil conservation districts and cooperators:				
(a) Planning, application and maintenance of practices	$55,630,480	$56,948,579	−$1,852,379	$55,096,200
(b) Observational field testing of conservation plant materials	714,382	620,000	−20,000	600,000
Subtotal	56,344,862	57,568,579	−1,872,379	55,696,200
Unobligated balance	1,050,552			
Total available or estimate	57,395,414	57,568,579	−1,872,379	55,696,200
Transferred to "Salaries and expenses, Bureau of Agricultural Economics"	+224,500			
Transfers in 1955 estimates to:				
"Salaries and expenses, Agricultural Research Service"	+618,393			
"Salaries and expenses, Federal Extension Service"	+25,055			
"Salaries and expenses, Forest Service"	+1,233,471			
Transfers in 1956 estimates to:				
"Salaries and expenses, Office of Information, Agriculture"	+3,800	+3,800		
"Flood prevention, Soil Conservation Service"	+1,443,381	+1,513,292		
Total appropriation or estimate	60,944,014	59,085,671		

NOTE.—Prior year balances of $1,997,883 were available in 1954 and $1,220,993 were available in 1955 from funds appropriated for emergency channel restoration and flood rehabilitation work. It is estimated that $1,190,993 of the latter amount will be returned to the surplus fund of the Treasury.

STATUS OF PROGRAM—ASSISTANCE TO SOIL CONSERVATION DISTRICTS AND OTHER COOPERATORS

CURRENT ACTIVITIES

The planning and establishment of soil- and water-conservation measures on farm and ranch lands is generally carried on in cooperation with soil-conservation districts. These conservation districts are local units of Government, organized under State laws and responsible to the landowners and operators in the districts and to the State legislatures. They are founded upon the sound principle of local initiative, direction, and control and are formed only in response to the petition and favorable referendum vote of the landowners and operators who are carrying on agricultural operations within the proposed district boundaries. Conservation districts, numbering 2,618 on June 30, 1954, have been organized in all 48 States, Hawaii, Alaska, Puerto Rico, and the Virgin Islands.

The following types of assistance are being furnished to conservation districts in carrying out locally adapted programs of soil and water conservation:

1. The services of soil scientists who make the necessary physical inventories of the land to secure data (soil type, degree of slope, character, and extent of erosion, present land use, etc.) needed to determine the use capabilities and conservation needs of each acre of land. These soil surveys are conducted cooperatively with the land-grant colleges and other designated State agencies and the survey reports and related soil maps are eventually published for the use of the Service, other Federal and State agencies and the public, in the development of land-use programs and for other purposes.

2. The services of soil conservationists, engineers, and other agricultural specialists and aides who help farmers and ranchers develop and apply individual conservation farm or ranch plans. The soil- and water-conservation practices included in such conservation plans allow for the best possible use of the farmer's land, labor, equipment, and financial ability to do conservation farming on his land.

3. The use of special equipment needed to facilitate establishment of conservation practices but which is of a kind that is beyond the purchase ability of an individual operator or for other reasons not readily available to the farmers and ranchers within the conservation district.

4. Technical assistance in watershed planning and other group enterprises, comprising consultation and advice on water and sediment problems, the development of work plans and supervision over construction, for the purpose of retarding runoff, stabilization of roadside waterways, reduction of sediment damage to agricultural lands, reservoirs, industrial property, and roads and bridges; and the drainage or irrigation of valuable agricultural lands.

5. In the Western States, streamflow forecasts—developed from snow surveys—which serve as a basis for efficient seasonal utilization of water available for irrigation and other purposes.

6. The operation of a limited number of nurseries for observational purposes and field-scale trials of promising conservation plant materials to determine their suitability for erosion-control purposes, and cooperation with non-Federal agencies in the propagation and utilization of new and uncommon strains of vegetative planting materials to promote adequate domestic production and distribution for conservation purposes.

In cooperation with other Federal and State agencies, some assistance is also given to other farmers and ranchers outside conservation districts. This assistance develops a better understanding locally of erosion and land-use problems, encourages more widespread adoption of conservation farming methods, and assures technical soundness of the practices applied.

In addition, the Service provides technical assistance to agricultural conservation program participants in the planning, layout, and establishment of permanent-type conservation practices, both within and outside soil-conservation districts. Part of the cost of this work is paid from funds advanced from the appropriation for that program.

RECENT PROGRESS

New conservation districts organized

During the fiscal year 1954 local farmers and ranchers organized 69 new conservation districts and 106 additions to existing districts comprising in all about 37½ million acres. As of June 30, 1954, the 48 States and territorial possessions, all of which have enacted soil-conservation-district legislation, had organized a total of 2,618 conservation districts covering an area of over 1.4 billion acres. Approximately 88 percent of the total farms in the Nation are now within the boundaries of organized conservation districts with 14 States and 2 territorial possessions completely covered by such districts. It is anticipated that there will be approximately 74 new districts organized in 1955 and 58 additional districts are forecast for 1956 which will bring the total number to 2,750 with over 94 percent of the Nation's farms included within district boundaries. The following table shows information concerning the conservation districts organized as of July 1, 1954:

Kind of district	State	Number of districts	Approximate area (acres)	Number of farms	Farmland (acres)
Soil conservation districts	46 States [1]	2,536	1,414,271,817	4,707,181	940,619,211
Do	Caribbean area	19	2,269,711	54,270	1,855,502
Do	Hawaii	13	2,290,889	3,702	983,094
Wind erosion districts	Texas	2	1,520,240	909	1,478,635
Subdistricts [1]	New Hampshire	10	5,770,880	13,391	1,713,731
Do	Alaska	9	4,391,000	924	104,374
Work area (called districts) [1]	Connecticut	8	3,135,360	15,615	1,272,352
Grass conservation districts	Montana	20	6,950,796	1,797	4,093,653
Imperial irrigation district	California	1	884,990	4,838	501,830
Total conservation districts		2,618	1,441,495,683	4,802,627	952,622,382

[1] In New Hampshire and Connecticut the comparable organizational units are called subdistricts and work areas, respectively.

Number of farms and acreage in conservation districts

Date	Number of districts organized	Total acres in organized districts	Approximate acres in farms	Number of farms in districts
Actual:				
June 30, 1953	2,549	1,403,988,782	933,093,148	4,713,875
Average per district		550,800	366,062	1,849
June 30, 1954	2,618	1,441,495,683	952,622,382	4,802,627
Average per district		550,610	363,874	1,834
Estimated:				
June 30, 1955	2,692	1,475,000,000	975,000,000	4,925,000
Average per district		547,920	362,184	1,829
June 30, 1956	2,750	1,505,000,000	995,000,000	5,025,000
Average per district		545,450	361,818	1,827

Information furnished groups sponsoring soil and water conservation

The conservation of the Nation's soil and water resources is of great concern not only to farmers and ranchers but to civic groups, industrial organizations, labor unions, business and professional men, educators, ministers, youth organizations, and others. This is evidenced by the increasing efforts of individuals and groups to stimulate activity in soil and water conservation work through informational programs.

Most civic, educational, and religious organizations see the sponsorship of programs of conservation information as an opportunity and obligation to promote human welfare through conservation of these basic resources. Business and industrial organizations see it not only as an obligation of good citizenship but also as being basic to their own business prosperity. Many of these groups look to the Soil Conservation Service for factual information and guidance on the information programs they choose to sponsor. The Service gives such cooperation insofar as its facilities permit. In fact, nearly all the informational activities of the Service are directed toward helping such groups promote community, State, regional, or national programs on soil and water conservation.

Farm and ranch conservation planning improved

The progressive planning system, instituted in 1951, has been carefully analyzed, and in April 1954 minor changes were made which are expected to improve the effectiveness and increase the scope of conservation farm and ranch planning throughout the Service. Under the progressive planning system large numbers of additional farmers and ranchers each year have become cooperators with their soil conservation districts and have started the development of conservation plans for their operating units. The number of new cooperators requiring assistance each year has caused an increase in the workload in many work units in planning and applying individual practices. This has resulted in a decline in the number of new basic plans developed. At the same time, however, the large number of new cooperators who have done some conservation work has resulted in a steadily increasing amount of conservation applied to the land each year with technical assistance from the Service.

Although there has been a significant increase in application of conservation practices, the single practice planning approach usually does not result in adequately coordinated basic conservation plans for operating units. More emphasis will be given in the future to basic farm and ranch conservation planning in order to assure a technically sound program.

Conversion of cropland to grass widely adopted as part of the soil-conservation program

The conversion of cropland to grass has progressed very rapidly in many parts of the country. This movement has been especially significant in the Southeast. Many new and important grasses and legumes not available 10 years ago have been introduced and widely adopted as part of the conservation program of soil conservation districts with Service assistance. A whole new industry centering around the production and processing of grass and legume seed has grown up in the Southeast. Abundant supplies of seed at reasonable prices are now available. The resulting increase in livestock production and decrease in cotton growing has helped reduce erosion, stabilize the agriculture, and significantly increase farm incomes. These widespread changes have increased the requests from farmers for technical assistance from the Service. Farms that were planned only a

few years ago for maximum crop production are now being replanned for maximum forage production. Terraces once needed on cropland are being leveled where those fields are planted to grass. Grass culture in fields formerly devoted to row crops has brought about extensive adjustments in farming methods, machinery and enterprises. New conservation techniques have been developed and widely adopted by farmers who have found grass-based crop rotations and livestock production to be more stable and profitable than a cash-crop system of farming.

Profits increased through new conservation program developed for California ranges

On most western ranges, summer is the time the forage makes its best growth, the plants are at their most nutritious stage, and livestock make their best gains. However, in California the annual forage plants dry completely by the first of May, quickly lose their value after that date, and grazing animals lose weight unless fed expensive concentrates. As the forage dries, much of it crumbles and disappears creating an erosion hazard by exposing the soil to washing fall rains.

After considerable study of all phases of the problem, the Soil Conservation Service technicians have developed what appears to be a highly satisfactory solution—a system of (1) using grasses specially developed for the area to provide more tonnage and a longer green-feed period, (2) applying fertilizers to bring about increased growth and to give the necessary soil protection, and (3) the application of good range management. This program has proven to be more profitable to the landowners; the ratio of benefits to costs is over 3 to 1. On one ranch in the Corning Soil Conservation District, for example, fertilized range produced 127 pounds of lamb per acre, while comparable unfertilized range produced only 11.6 pounds per acre. Deducting all costs, the net return was increased $8.21 per acre. Of great importance also was the fact that 2½ tons of plant material per acre were left on the range to protect the soil and provide some fall grazing.

Survival of tree plantings increased through careful woodland site selection

Each year more and more tree seedlings are being given to landowners and operators by the forest industries. Surveys have shown that promiscuous distribution of tree seedlings results in low survival. Last year the West Virginia Pulp & Paper Co., through its Georgetown, S. C., division, gave more than 2 million pine seedlings to selected landowners in South Carolina and Georgia. The company made its selections on the basis of reports of land conditions made by the Soil Conservation Service farm planners. These reports showed kind and condition of land on which trees were to be planted, thereby eliminating one of the primary causes of tree mortality. Another major cause of past planting failures of industry-donated stock—lack of landowner interest and understanding of how to plant—was also eliminated by making it necessary for the landowner to find out his lands' suitability for trees.

Land damage by wind erosion increased during fiscal year 1954

The land damaged by wind erosion in the Southern Great Plains during the 1954 blow season greatly exceeded that of recent years. The results of a survey made by Service personnel showed the total agricultural land damaged as of July 1 was 18,423,000 acres, of which 13,578,000 acres was cropland and 4,844,000 acres was rangeland. This acreage of land damage has been accumulating over a period of several drought years, but most of it occurred during the past year. Furthermore, the intensity of damage in certain localities has been increasingly severe.

Wind-damage estimates as of July 1, 1954, were as follows:

	Cropland	Rangeland	Total
	Acres	*Acres*	*Acres*
Colorado	3,833,000	1,660,000	5,493,000
Kansas	4,704,000	346,000	5,050,000
New Mexico	1,198,000	814,000	2,012,000
Oklahoma	796,000	42,000	838,000
Texas	3,048,000	1,982,000	5,030,000
Total	13,578,000	4,844,000	18,423,000

One of the largest concentrations of severely damaged land is in southeastern Colorado and southwestern Kansas. The other area is in eastern New Mexico, and in the southwestern part of the high plains in Texas. Within these areas, more than 50 percent of all cropland had been damaged by soil blowing.

Land damaged during the current drought period is much more widespread and severe than during the 1930's. More damage to land is likely during the next blow season because of small soil moisture supplies, poor crop residue conditions and lack of vegetative cover on the land. The financial and credit conditions of many of these farmers and ranchers are critical, but many propose to stay in these areas and use the conservation program on their land. District supervisors and Service technicians are working together closely in planning the conservation program needed to control land damage in 1955.

Evidence of the effectiveness of known measures in protecting land against wind erosion is abundant. The areas of greatest damage in the early 1930's have given little trouble in the past 2 years because of the widespread adoption by farm and ranch operators there of adequate protective measures. It was observed that where farmers were able to apply their conservation programs fully and properly, damage was either much less than on unprotected farms, or was absent entirely, except in some cases for wind depositions. Damage that has occurred has been limited generally to deposition of wind-blown soil from unprotected areas.

Water conservation measures intensified due to drought conditions

Disappearance of surface water supplies and falling underground water tables over large areas of the country brought about by several years of drought and increased use of water for irrigation has resulted in new emphasis on water management measures in the conservation needs of the country. Even though the practices and measures applied to the land for both soil conservation and water conservation have some similarity, their application must be intensified to provide relief from drought. More infiltration of water is needed to provide for present crop production, farm livestock, and general rural use as well as to recharge the ground water supply. The intensity with which water conservation measures have been applied during the past fiscal year already reflects the change in total needs for such measures to improve the water supply. Local adjustments are now being made in the conservation needs data to reflect requests from farmers for additional water conservation measures and to provide for the application of additional practices and measures.

Assistance provided for cooperative group drainage work

Farmers in the Dixon Soil Conservation District in Solano County, Calif., had a serious drainage problem on 16,000 acres where a high water table aggravated by irrigation waste water and a poor surface water disposal system was resulting in water logging and increased alkalinity in much of the soil. An investigation was made by SCS technicians and a drainage system was constructed including 5 miles of main canal and 24 miles of laterals which has effectively cured the drainage problem. The 61 farmers raised the money for construction among themselves; and in addition, the American Telephone & Telegraph Co. paid for the drainage of 640 acres of their land; the local reclamation district allowed the new drainage system to use part of their ditches for outlets; a local town paid $1,200 for a connecting link in the drainage system; the county made legal advice available to the group; a local bank extended special credit for the work; the Navy constructed necessary ditches on its land; some funds were made available under the agricultural conservation program for the feeder ditches; and the county furnished the necessary culverts where the ditches would cross the country roads. The technical assistance furnished for the drainage investigations and designs was made available through an agreement with the district. The farmers agreed to prepare the drained land so they could carry on a conservation program which required they do land leveling and the installation or revision of their farm irrigation system.

Publication of soil survey reports accelerated

Soil surveys were being made in over 2,600 soil conservation districts as a basis for conservation planning and as part of the national soil survey. Progress in converting soil conservation surveys to standard soil surveys in most States has been slow because of the need for additional correlation work. Twenty-two soil survey reports were published, including a soil map and text describing the soils and their use. Reports published to date total 1,638. At the present time 76 reports are awaiting publication.

Procedures were adopted during the 1954 fiscal year to complete map preparation work through the tint separation stage. This means that soil maps for publication will go directly to lithography and result in more rapid publication.

Snow surveys and water supply forecasting data reduced impact of drought and floods

There are now 1,202 snow courses in the Western States network, including those in British Columbia, Canada. In the fiscal year 1954 some 899 snow surveyors (most of them only employed a few days each year) traveled a total of 43,000 miles by foot, over-snow machines, or aircraft, and made 49,000 individual snow measurements. Seasonal streamflow forecasts were made on all major streams of the West and many of the minor streams which are major sources of irrigation water for farmers and ranchers in soil conservation districts. Forecasts were made for 277 stations and over 20,000 copies of the forecasts were provided to the water users.

These measurements of snow pack showed that prospective water supplies for the western United States in 1954 varied from ample supplies and possible floods on the northern section of the Columbia Basin to an extreme and severe water shortage in the Rio Grande in Colorado and New Mexico. The water shortage in the Rio Grande was forecast to be particularly critical with a combination of short snow pack and lack of water stored in reservoirs. This situation developed in part as a climax of a series of years of deficient runoff. This picture of low prospective runoff was forecasted to extend to a lesser extent to central Colorado, parts of Utah, Nevada, extreme southern Idaho, southeastern Wyoming, and parts of Arizona. The snow survey information enabled farmers, water-users associations, irrigation districts, municipalities, power companies, loan agencies, and others in the affected areas to take effective steps to lessen the impact of the water shortage on their economy. It also was useful in combating floods. For example, the snow survey leader at Boise, Idaho, early in the season, April 1, 1954, directed attention to a potential and virtually certain flood hazard on the Kootenai River of northern Idaho. In collaboration with the Rover Forecast Center of the United States Weather Bureau at Portland, Oreg., a joint forecast of the potential flood affecting the area around Bonners Ferry, Idaho, was released April 1 and again on May 10, the latter containing a specific forecast of 35.5 feet river elevation at Bonners Ferry. With such advance warning Federal troops and heavy equipment were rushed to Bonners Ferry. The town was evacuated and dikes were reinforced. The river peaked at 35.55 feet on May 21, 1954. Only about 6,000 acres were flooded as a result of dike failure. The forecast resulted in action to prevent a large amount of damage to agricultural lands and commercial and industrial property along the river.

Fourteen nurseries disposed of during 1954

All but 10 of the 24 Soil Conservation Service-operated nurseries were either closed or transferred to other agencies during the 1954 fiscal year. Of the 10 that were retained, 5 are operated by the Service and the remaining 5 by cooperating agencies under agreements and on an annual plan of work. Seed and plants of common species are no longer produced at these nurseries as it is expected that these will become available through commercial channels. Nursery facilities are to be entirely devoted to the testing and production of new and untried plant materials for further testing by cooperating agencies and on farms in soil conservation districts.

In the fiscal year 1954 the nurseries grew and distributed over 30 million trees and shrubs and approximately 400,000 pounds of grass and legume seed, mostly to soil conservation districts. A similar quantity of tree and shrub seedlings, too small for field planting, was left for disposition by cooperating agencies at the time responsibility for nursery operation was transferred to these agencies.

Special plants to control erosion located and tested

Plant materials of all kinds, including trees, shrubs, grasses, and legumes, are in constant demand to control erosion and effect better land use. This is true especially on critical areas such as shifting sands, steep hillsides, unstable stream and pond banks, and terrace outlets and waterways. Such sites and conditions require specialized materials and techniques. These the Service endeavors to supply through plant-materials specialists who are in intimate touch with such needs and are constantly in search of plants and techniques to meet these needs. Such plants come from special strains found in native vegetation, from foreign introductions, and breeders materials at experiment stations. They are assembled at SCS and State cooperative nurseries, tested on nurseries, at experiment stations, and on farms, and increased through crop improvement associations, commercial and farmer seed growers, soil conservation districts and others.

One example of a grass that was developed in the above manner is creeping foxtail. This plant is still in the developmental stage for conservation trial and

use. Plants from two separate introductions are being tested. One introduction came through a Russian immigrant who brought a hatful of seed with him and scattered it around a slough in central North Dakota in about 1900. The other came from the Plant Introduction Division at the Pullman, Wash., nursery where it was planted in about 1935. Both accessions seem to be doing equally well in the two areas and show promise for hay and pasture on wet lands. This foxtail grows on about the same sites as does Reed canary grass, but is less stemmy and hence favored for livestock feed.

Survey and planning accomplishments

The following tables show the major accomplishments of the Service in assisting soil conservation districts and other cooperators in the fields of surveys and planning. The various types of surveys are defined as follows:

Soil surveys are those where soil types and boundaries are determined in detail by actual field examination and where classification is in accordance with the standard nationwide system of soil classification, to furnish information for conservation planning, land inventories, publication, and other purposes.

Reconnaissance surveys are those where soil types are determined by observation with only random tests and provide data on soils which are adequate to delineate boundaries of problem areas and for broad program planning.

Range surveys are those of vegetative range sites and physical conditions on grazing land, commonly used in the West to supplement, or, in lieu of, soil surveys.

Surveys

Type of survey	Unit	1954 actual	Total as of June 30, 1954	1955 estimate	1956 estimate
Soil surveys	Acres	34,834,475	455,896,394	38,000,000	40,000,000
Reconnaissance	do	817,277	152,450,009	1,200,000	1,500,000
Range	do	4,486,644	22,376,626	6,000,000	7,000,000

Conservation planning of individual farms and ranches

Explanation	Active district cooperators		Net increase in soil conservation district cooperators and basic plans
	Number	Acres	
FISCAL YEAR 1953			
As of June 30, 1953:			
Number soil conservation district cooperators	1,296,969	376,067,691	177,398
Soil conservation district cooperators having basic plans	951,935	262,620,796	3,994
Number basic plans fully applied	156,064	31,002,105	31,584
FISCAL YEAR 1954			
As of June 30, 1954:			
Number soil conservation district cooperators	1,454,287	423,600,086	157,318
Soil conservation district cooperators having basic plans	974,463	268,351,553	22,528
Number basic plans fully applied	162,336	34,571,990	6,272
FISCAL YEAR 1955 (ESTIMATED)			
As of June 30, 1955 (estimated):			
Number soil conservation district cooperators	1,618,000	471,000,000	163,713
Soil conservation district cooperators having basic plans	1,018,000	280,000,000	43,537
Number basic plans fully applied	194,000	41,000,000	31,664
FISCAL YEAR 1956 (ESTIMATED)			
As of June 30, 1956 (estimated):			
Number soil conservation district cooperators	1,788,000	520,000,000	170,000
Soil conservation district cooperators having basic plans	1,069,000	294,000,000	51,000
Number basic plans fully applied	234,000	50,000,000	40,000

Group enterprise plans [1]

Item	Unit	1954 actual	Total as of June 30, 1954	1955 estimate	1956 estimate
Group job planned	Number	1,707	14,265	1,800	1,800
Farms to be benefited	do	15,725	129,172	16,000	16,000
Area to be benefited	Acres	1,200,558	10,948,839	1,250,000	1,250,000
Group jobs completed	Number	1,429	11,193	1,600	1,600
Farms benefited	do	14,264	92,507	15,000	15,000
Area benefited	Acres	834,214	6,996,202	900,000	900,000

[1] See table (c) below for types of group jobs involved.

Application of practices

The following tables show some of the major conservation practices that were applied with technical assistance furnished by the Soil Conservation Service:

(a) *Practices applied on farms and ranches of soil conservation district cooperators*

Type of practices	Unit	1954 actual	1955 estimate	1956 estimate
Contour farming	Acres	4,127,109	4,210,000	4,210,000
Cover cropping	do	4,839,091	4,935,000	4,935,000
Stripcropping	do	930,235	949,000	949,000
Seeding pasture and range	do	3,008,396	3,068,000	3,068,000
Tree planting	do	266,033	271,000	271,000
Farm and ranch ponds	Number	64,521	66,000	66,000
Terraces	Miles	47,791	49,000	49,000
Diversion channels	do	4,808	4,900	4,900
Farm drainage	Acres	1,577,760	1,610,000	1,610,000
Improved water application	do	949,680	968,000	968,000
Land leveling	do	375,093	382,000	382,000
Field windbreaks	Miles	2,018	2,060	2,060

(b) *Practices applied on farms and ranches of nondistrict agricultural conservation program participants* [1]

Type of practices	Unit	1954 actual	1955 estimate	1956 estimate
Terraces	Mile	3,543	3,366	3,189
Diversions and dikes	do	607	577	546
Land restoration	Acre	3,758	3,500	3,300
Sod waterways	Cubic yard	4,116,984	3,911,000	3,705,000
Outlets, flumes, and chutes	Number	3,616	3,400	3,200
Erosion-control dams	do	1,402	1,300	1,260
Permanent riprap	Square yard	84,432	81,200	76,900
Contour stripcropping	Acre	44,341	42,100	40,000
Contour farming	do	457,870	435,000	412,000
Contour orchards and vineyards	do	10	9	8
Cross slope stripcropping	do	879	830	790
Cross slope farming	do	10,736	10,200	9,600
Stream-shore erosion control	Mile	88	83	79
Grazing-land management	Acre	1,304,226	1,240,000	1,174,000
Stock water dams and ponds	Number	10,618	10,000	9,500
Reorganization of farm irrigation systems	Acre	221,107	210,000	199,000
Land leveling	do	288,795	274,000	260,000
Irrigation reservoirs	Number	529	500	480
Improved water application	Acre	8,058	7,600	7,200
Farm drainage	do	392,337	373,000	353,000
Land clearing	do	84,028	80,000	75,600
Water-disposal areas	do	3,787	3,600	3,400

[1] Approximately 40 percent of the cost of this work is financed with funds available for work with other cooperators under "Conservation operations" and 60 percent with funds advanced from the item "Agricultural conservation program" under the 5 percent transfer proviso contained in the annual appropriation act.

(c) Practices applied in group enterprises

Type of practice	Unit	1954 actual	Total as of Jun 30, 1954	1955 estimate	1956 estimate
Ditch and canal excavation	Miles	1,324	12,819	1,350	1,350
	Cubic yards	11,340,270	108,467,959	11,560,000	11,560,000
Spoil-bank leveling	Cubic yards	4,966,592	50,358,566	5,000,000	5,000,000
Levees and dikes	Miles	23	371	25	25
	Cubic yards	410,033	5,225,863	445,000	445,000
Channel stabilization	Miles	13	330	15	15
Drainage and irrigation pipe	Linear feet	965,091	4,075,440	970,000	970,000
Reservoirs	Number	20	170	25	25
	Acre-feet	10,048	72,465	12,000	12,000
Other structures	Number	2,076	17,724	2,080	2,080

Study of rate of progress in planning and applying soil-conservation practices

During the past year a study was conducted of the rate of progress being made in the planning and application of soil and water conservation practices on farms and ranches in a total of 378 soil-conservation districts. These districts included 3 specific age groups; 1 a group of 93 districts which began operation in 1939; a second group of 127 districts which began operation in 1943; and a third group of 158 districts which began operations in 1948. The study was based on reports of such cumulative accomplishments as were available at national headquarters of the Soil Conservation Service as of December 31, 1952.

In the 14-year-age group of 93 districts which were located in 24 States and comprised about 54.9 million acres of land in farms, 23,386,026 acres (or about 43 percent of the total) had been included in basic farm or ranch-conservation plans as of December 31, 1952. The cumulative acres on which conservation practices had been applied was 16,384,670 or about 30 percent of the total land in farms. This shows an average annual treatment rate of approximately 2 percent per year, or 50 years in which to apply conservation on all the land in farms in this group of districts. In 67 of the 93 districts one-half or less of the total land in farms was included in basic conservation plans, and in 85 of the 93 districts, one-half or less of the total land in farms had conservation measures applied.

In the 10-year-age group of 127 districts which were located in 33 States and comprised about 43.9 million acres of land in farms, 15,449,474 acres (or about 35 percent of the total) had been included in basic farm or ranch conservation plans. The cumulative acres on which conservation practices had been applied was 10,194,521, or about 23 percent of the total land in farms. This likewise indicates, after 10 years of operation, an average annual treatment rate of approximately 2 percent per year. In 101 of the 127 districts one-half or less of the total land in farms were included in basic conservation plans, and in 116 of the 127 districts one-half or less of the total land in farms had conservation measures applied.

In the 5-year age group of 158 districts, which were located in 37 States and Alaska and Hawaii and comprised about 59 million acres of land in farms, 10,814,595 acres (or about 18 percent of the total) had been included in basic farm or ranch conservation plans. The cumulative acres on which conservation practices had been applied was 6,102,359 or about 10 percent of the total land in farms. As in the 2 other age groups, after 5 years of operation, the rate of application of conservation practices in this group of districts averaged about 2 percent per year.

Comparisons of trends by age groups were made for the first 5-year periods of district operations in the 14,10, and 5-year age groups for similarity, and also with each other after 5 or 10 years of operation. In each of the 3 groups, the percentage of acres planned and acres treated after 5 years of operation were quite similar. The 1939 and the 1948 groups were almost identical. The 1939 and 1943 age groups had also planned and treated almost identical percentages of their total land in farms after 10 years of operation. While this study of progress would indicate an average treatment rate of 2 percent per year for all of the soil-conservation districts, it does not reflect the continuing job of program maintenance and improvement. Past Service records did not provide sufficient data to prepare such a report, but new reporting procedures recently placed into effect will do so. The new reporting system will provide each year, information for each soil-conservation district as to (1) the conservation needs by major practices, and land-use adjustments, (2) practices applied and now on the land, (3) conservation work remaining to be done, and (4) the estimated goals to be accomplished in the

succeeding year. At the end of the 1955 fiscal year, the Service will have individual district and State totals showing accomplishments to date and conservation needs remaining. From these new reports, the status of farm and ranch conservation planning and land-treatment work in each soil conservation district in the United States and its territories can be determined.

In connection therewith it should be noted that the farm conservation planning and land treatment job remaining to be done is a continually changing workload. In quite a number of cases assistance given in planning and establishing conservation practices on a farm or ranch may have to be furnished again. This is due to changes in farm ownership estimated at 3 to 5 percent annually, new land development through drainage, clearing, etc., changes in type of agriculture such as shifting from cropland to grassland or from dryland to irrigation farming, or improved technology. Furthermore, conservation farming involves working with people—the landowners, their tenants, or their farm operators. As their wishes and desires change, the conservation program for a farm or ranch may also change. Sometimes there are combinations made of several tracts, or large tracts are subdivided into several farms. Any of the conditions mentioned may require replanning the soil and water conservation and land-use program for the land involved. Service reports of conservation needs and accomplishments each year will reflect all these changes. As the number of cooperators having basic farm or ranch conservation plans applied increases, there develops a greater workload of program improvement and maintenance of practices. All of this affects the rate of progress in getting conservation treatment applied to all agricultural land in the soil-conservation districts.

Comprehensive operations plan developed and installed

A complete system of operations planning was developed and installed in the Service in 1953. Annual plans of work for States, areas, and work units are now developed each year, just ahead of the beginning of the calendar year. This is systematically done nationwide. Washington field representatives and other staff people work with State conservationists at scheduled planning conferences to develop State plans plus general schedules for carrying them out. Similar work is done by States with area conservationists, and by areas with work unit conservationists. These plans provide for all phases of work and are followed up by inspections, similarly systematized, and by reviews of accomplishments.

Additional training centers established to increase employee proficiency

For a number of years, the Service has operated a very successful training center for both professional and subprofessional employees at Coshocton, Ohio. Such training has speeded up the time in getting new men into full production. It has also resulted in saving time of older field technicians and has made possible a more thorough treatment of subject-matter training by the best qualified technical specialists in the field.

Because of demonstrated efficiency of the Coshocton training center, additional ones have been established in various parts of the country in order to provide in-service group training to all new professional and subprofessional employees on a servicewide basis. The professional training involves 4 to 5 weeks and subprofessional training involves 3 weeks, with some modification in a few of the smaller centers. Training centers are now operating at Coshocton for the Northeastern and Cornbelt States; at Athens, Ga., for the Southeast; at Fort Robinson, Nebr., for the Northern Plains States; at Lubbock, Tex., for part of Texas and adjoining States; and at Huntsville, Harlingen, Terrell, and Bryan, Tex. (on a smaller scale), for the rest of the State.

Reorganization of SCS successfully implemented in 1954

The reorganization of the Soil Conservation Service, as announced on November 2, 1953, in supplement 4 of Secretary's Memorandum No. 1320, was completed before the close of the 1954 fiscal year. This reorganization eliminated regional offices and placed greater responsibility for program formualtion and execution in the State offices. Certain of the functions of the regional offices, such as program coordination, inspection, supervision of staffs of technical specialists serving groups of States, etc., of course, were assumed by the Washington office.

Transfer of personnel to the State offices, to the Washington office, and to the Washington office staff specialists positions located in the field, took place as rapidly as was feasible over a period of about 6 months. About 800 employees were involved in these moves.

Most technical staff transfers were completed by April 1954. Transfer of administrative staffs and functions to the State offices took place over a period

of 3 months, beginning in April 1954. As rapidly as the State office staffs were completed, necessary training in new duties and procedures was given, and required authorities were delegated, the State offices took over responsibility for budgeting, accounting, personnel, procurement, and other administrative functions. As of June 30, 1954, all States had assumed full operating responsibilities assigned to them under the reorganization plan. Considering the size of the task (which required complete realinement of functions, new job descriptions, development of a new accounting system, revision of handbooks, extensive training details, the transfer of many employees, etc.) and complexity of problems involved, the transition to a Washington-State office operating basis was effected with a minimum of disruption of service being rendered to farmers and ranchers.

Statement of Administrator

Mr. Whitten. Mr. Williams, will you present your general statement at this time?

Mr. Williams. Mr. Chairman and gentlemen of the committee, the budget justifications supplied to the committee contain a rather detailed discussion of the activities of the Soil Conservation Service. However, I appreciate the opportunity to present a statement and to supply any further information that may be desired in justification of the SCS budget. Key members of my staff are here also to assist in any possible way.

I would like at this time just to identify them to the committee.

Mr. Young, the Deputy, could not be here this afternoon because of other commitments, but Dr. Van Dersal, who is Assistant Administrator for Management is here; Dr. Kellogg, Assistant Administrator for Soil Surveys; Mr. Dykes, Assistant Administrator for Field Services; Mr. Carl Brown, Director of our Planning Division under which our watershed planning comes, and Mr. Dorny, Director of the Budget and Finance Division.

Reorganization of Soil Conservation Service

At the time of the hearings before this committee a year ago, we were in the midst of reorganizing the Service pursuant to the Secretary's Memorandum 1320. This reorganization eliminated the regional offices and placed greater responsibility for program formulation and execution in the State offices of the Soil Conservation Service. It also added to the workload of the Washington office because certain functions necessarily had to be assumed here including program coordination, inspection, and supervision of staffs of technical specialists serving groups of States. Also, following the authorization of this committee, and the Congress, to use available funds for field information specialists to assist the State conservationists with their information responsibilities, we have provided a small group of these specialists who are attached to the Washington office.

These 10 people are located at 5 cities: Philadelphia, Pa.; Spartanburg, S. C.; Milwaukee, Wis.; Denver, Colo.; and Oakland, Calif., from which they are available to work in the groups of States corresponding to our plant technology servicing areas.

It is still too early to fully appraise the functioning of our reconstituted organization. As a whole, I am pleased with the way it is functioning but some minor adjustments may be essential to obtain maximum efficiency. Our State offices as a whole are now well-staffed and functioning effectively. I am convinced that working

relations at the State level have improved during the year. Judging from comments from our State conservationists, they now have all of the authority for actions that they need and desire.

STATUS OF NURSERY ACTIVITIES

I would like to briefly mention our nursery activities. As this committee is aware, we are now operating only five nursery units. This is a reduction from 24 units some 2 years ago. The five include Beltsville, Md.; Elsberry, Mo.; Pleasanton, Calif.; Pullman, Wash.; and Aberdeen, Idaho.

We are awaiting consideration of the Idaho Legislature with respect to the disposition of the Idaho unit. By the end of this fiscal year all of these units will have been placed on strictly an observational operations basis; therefore, our budget for 1956 proposes a small reduction. We are also contracting with other agencies at five former SCS nurseries for the production of specified observational planting materials. These locations are Americus, Ga.; Big Flats, N. Y.; Mandan, N. Dak.; Manhattan, Kans.; and Tucson, Ariz. This arrangement is working satisfactorily at 3 locations and we are hopeful of making improvements at the other 2. The Aberdeen, Idaho, location is favorably situated in the northern high plains for the types of plants needed in that area. The budget proposes that this nursery will continue to be operated as an observational nursery and for the production of plant materials for testing, as are the other nine nurseries, either by contract with a State agency or directly by the Service.

Present nurseries, including that at Aberdeen, do not fully meet the needs of the southern high plains. We hope, within the budget proposed for 1956, to be able to work out satisfactory arrangements for an observational nursery to serve that area also.

MANAGEMENT IMPROVEMENT ACTIVITIES

During this year we have readjusted our inspection system and operations management activities to the Washington-State-Area-Work Unit line of administration. We are making systematic and thorough reviews of program activities at each of these levels. This approach is resulting in more efficient use of time, better scheduling of work, and improvement in the quality of techniques and relations.

Also, during the year we have established a Program Appraisal and Internal Audit Unit, which reports directly to the Administrator, for systematic sampling of the effectiveness of program administration and accountability for our resources.

I consider the working relations with other agencies of the Department to be excellent. This is true, with few isolated exceptions, not only at the Washington level, but also in the States and counties. Specific steps were taken to provide improvements with the Farmers Home Administration and the Extension Service. The SCS has assisted the FHA this year in carrying out the provisions of Public Law 597, under which credit is available to farmers and ranchers for conservation work. This has provided an additional opportunity for service by SCS in most sections of the country, particularly the drought areas where water developments for agricultural purposes are

urgently needed. It appears that conservation credit will make a very substantial contribution to getting conservation on the land. In the interest of assuring sound investments both for the Government and the farmer, it seems essential that the loans be based upon realistic conservation needs and adequate technical standards.

PROGRESS IN FISCAL YEAR 1954

In spite of widespread drought, the price-cost squeeze, reorganization, and other distractions, our records show that there were more soil and water conservation practices applied to the land in soil conservation districts with SCS help in fiscal year 1954 than in any previous year. We believe that this is due in part to increasing public understanding, good teamwork among agencies, continuously improving leadership by district governing bodies, and increasing efficiency of SCS operations.

During the year we have placed additional emphasis upon the basic conservation plan for farms and ranches. This plan, developed by the farmer or rancher with SCS technical aid, serves as a foundation for credit, cost sharing, and farm business planning. Because it is the farmer's own plan, it is his guide for enduring conservation work for many years ahead. In cooperation with the State experiment stations, we have made good progress with available resources in the soil survey work. Statistics are included in the budget notes with respect to specific items of conservation practice accomplishment and the progress in developing basic and group conservation plans.

During fiscal year 1954, farmers and ranchers organized 69 new soil-conservation districts and 106 additions to existing districts comprising in all about 37½ million acres.

WATERSHED PROTECTION AND FLOOD PREVENTION

There are three authorities at the present time under which watershed activities are carried out. Flood prevention operations on the 11 projects authorized by the Flood Control Act of 1944 are going forward consistent with work plans developed in cooperation with local interests. The budget estimates for fiscal year 1956 for these 11 projects are at about the same level as appropriations for fiscal year 1955. However, Department of Agriculture authorities for making surveys and initiating new projects under the Flood Control Act of 1936 were repealed when the President signed Public Law 566, 83d Congress, in August 1954.

The pilot watershed activities on the 60 small watersheds authorized by Congress in 1953 are being carried out under the authority of Public Law 46 of the 74th Congress. No additional watershed projects are now contemplated under this authority. Planning work is now getting underway under Public Law 566.

It is proposed that the rate of installation of work on the 60 pilot watersheds be increased from $5½ million to $6 million to permit completion of the work within the planned 5-year construction period. Nearly all of these projects are going forward in an effective manner and are achieving the objectives that this committee and the Congress desired—factfinding, demonstration, and experience in local-State-Federal partnership.

Since last August, a great many essential preliminary details have been worked out for effectuating Public Law 566. Immediately after the supplemental appropriation of $1¾ million was made available, the SCS began the assembly and training of the technical specialists needed in survey parties to assist local organizations with the development of watershed plans. These specialists in hydrology, geology, engineering, soils, and economics were obtained almost entirely from within the SCS. They had previously been working on other assignments of flood prevention, pilot watersheds, basin planning, and conservation operations. These technicians were brought together at convenient locations for group training on watershed planning and analysis. They have been assisting the State conservationists with field examinations of watersheds for which applications had been received. They are now working with local groups in the development of work plans. Forest Service personnel are working with SCS parties in the watershed planning work.

It may be of interest to the committee that there is widespread interest in the State governments in public Law 566. The governors of 43 States have designated State agencies to act for them in reviewing applications from local organizations. The State attorneys general in 32 States have issued opinions with respect to the legal eligibility of certain local organizations to participate in the program. Many of the State legislatures are at this time considering improvements in State laws to facilitate watershed programs.

On December 18, 1954, the President issued Executive Order No. 10584 which sets forth the rules and regulations for the administration of Public Law 566. Departmental policies for carrying out watershed activities are being developed. The SCS, in collaboration with the Forest Service, the Office of the Solicitor, and the Agricultural Research Service, is now working out procedural details to be included in handbooks. Also, during the past few months the Department has taken action to acquaint the public with the objectives and opportunities of Public Law 566.

The Department has received as of February 1, 1955, 216 applications for planning assistance.

I might add parenthetically there, that as of today, we have 254 applications in 27 States.

These applications were all concurred in by the governor or State agency before submission to our Washington office. Of these, it is expected that about 70 will be approved for planning assistance this year. It is anticipated that up to 25 work plans will be completed during the current fiscal year for submission to the Congress in accordance with the act. We further anticipate that approximately 45 work plans will be developed in the fiscal year 1956.

We do not look upon Public Law 566 as a replacement or alternative to the regular national programs of the Department but, rather, as providing for specific projects to intensify conservation treatment and supplement otherwise available activities. It is my opinion that it would be unwise to expand activities under Public Law 566 at too fast a rate. We believe that the budget request for 1956 is consistent with orderly development.

TECHNICAL SERVICING OF THE AGRICULTURAL CONSERVATION PROGRAM

Each year since 1950, when this committee first provided for the 5-percent transfer of agricultural conservation program funds at the county level for technical servicing by SCS of applicants under the agricultural conservation program, there has been an increasing demand for such work. In addition to providing a better technical foundation for expenditures under that program, it is my belief that this arrangement has helped to bring about good working relations in nearly every county, in all States, and at the national level.

During fiscal year 1954 the SCS provided technical service to 779,416 farmers and ranchers participating in the agricultural conservation program. This compares with 567,227 in fiscal year 1953. Of the total number serviced in 1954, 463,928 were cooperators with soil conservation districts.

Approximately 40 percent of the cost of this work is financed with funds available under the SCS conservation operations appropriation and 60 percent under the 5-percent transfer proviso. The actual transfers to SCS in 1954 were 3½ percent of the program funds at the county level. The funds transferred in 1954 were about $5,400,000. It is estimated that at least $5 million will be transferred for the 1955 program.

As an indication of the demand for SCS technical services, State agricultural stabilization and conservation committees in 32 States have requested our State conservationist to provide technical help in 1955 on practices in addition to the specific requirements of the National ACP Bulletin.

RESEARCH NEEDS OF SOIL AND WATER CONSERVATION PROGRAMS

Since the reorganization of the Department of Agriculture in November 1953, all soil and water conservation research of the Department is the responsibility of the Agricultural Research Service. The SCS looks to ARS and the State experiment stations for research results.

During the past year, in cooperation with the land-grant colleges, soil-conservation districts, and ARS, we made a comprehensive study of the soil and water research needs. Last fall we submitted a report of these needs to the Administrator, ARS.

I would like to especially emphasize the urgent need for more hydrologic data in view of the developments in the watershed activities. We desire to support the request of ARS in its budget for more hydrologic research and for the other soil and water conservation research items.

SOME PROBLEMS OF THE FUTURE

As we look to the future in soil and water conservation activities, we believe an essential point of emphasis must continue to be to assist farmers and ranchers with the development of their basic conservation plans wherever they have a conservation problem and desire such assistance. We believe that such efforts should be kept in balance with other conservation activities.

The current rate of progress of soil surveys of from 38 to 40 million acres per year does not quite keep pace with the annual increase of

acreage of district cooperators. We are hopeful that the participation of the State experiment stations in both surveys and the publication of results may be increased to help meet the needs for these surveys. At the present time, the SCS is putting about $5 million into the soil-survey effort and the States are expending about $800,000 on it per year.

As this committee is aware, there was a severe wind-erosion problem in the southern Great Plains in 1953. In spite of excellent teamwork of agencies of this Department with local governmental units, and farmers and ranchers, approximately 18 million acres in 5 States were damaged.

The drought over a 3-year period in the humid areas of the Southern States has resulted in intensified interest among farmers in sprinkler irrigation. We estimate that since 1950 there has been an increase of at least 100,000 acres sprinkler-irrigated in the eastern and humid areas. This development has, of course, intensified the concern about water supplies and has caused most of the Eastern States to seek improvements in State water legislation as well as to promote water-conserving practices and programs. The SCS has been called upon in all of the Eastern States to assist with these activities.

BUDGET ESTIMATE FOR CONSERVATION OPERATIONS

The estimate before the committee provides for a decrease in the budget for conservation operations for 1956 fiscal year as compared with the base for fiscal year 1955, of $1,872,379. This decrease consists of four items wherein improved efficiencies are believed to be attainable.

The budget proposes a decrease of $600,000 due to elimination of some area offices in States where it is practicable to adjust area boundaries or where administration and supervision of work units can be handled efficiently from the State office.

It is proposed that a decrease of $500,000 be accomplished by simplification and standardization of cartographic techniques and procedures and possible consolidation of some facilities.

A decrease of $752,379 is proposed due to reassignment of personnel to work on other programs and the consolidation of some work units.

A net decrease of $20,000 will also result from an adjustment in nursery operations from observation and production nurseries to strictly observational work.

During recent months we have given serious study to the problems that are posed in these estimates with respect to cartographic and area offices. While our studies are not in sufficient detail to make an accurate projection, significant economies are expected which will enable the Service to make the proposed savings. We find that adjustments in cartographic services, standardization of techniques and procedures will result in reduced cartographic operating costs. With respect to consolidations in area offices, we believe we can bring about adjustments in about 30 locations by the end of this fiscal year.

In several instances, where vacancies have occurred, we have designated an acting area conservationist in anticipation of subsequent consolidations. Further review and adjustment would be anticipated early in fiscal year 1956. Again it is expected that these

adjustments can be made without imposing an undue burden on area conservationists or State offices.

As we have gradually moved into the small watershed activity, we have found it desirable to shift some field personnel from conservation operations in districts to watershed planning work. This adjustment in addition to adjustments in workload among work units in States with especially small counties and districts makes consolidation of some work units on a studied basis desirable.

As I indicated earlier, the people here with me are key members of my staff, and with their help I should be happy to attempt to answer any questions this committee may have.

Conservation Operations

Amounts available for obligation

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$60,944,014	$59,085,671	$55,696,200
Transferred to "Salaries and expenses, Bureau of Agricultural Economics," pursuant to Public Law 286	−224,500		
Adjusted appropriation or estimate	60,719,514	59,085,671	55,696,200
Unobligated balance brought forward		1,220,993	
Reappropriation of prior year balance	1,997,883		
Reimbursements from non-Federal sources	369,928	420,333	400,000
Reimbursements from other accounts	1,127,470	1,084,704	1,100,000
Total available for obligation	64,214,795	61,811,701	57,196,200
Unobligated balance carried forward	−1,220,993		
Unobligated balance, estimated savings	−1,050,815	−1,190,993	
Obligations incurred	61,942,987	60,620,708	57,196,200
Comparative transfer to—			
"Salaries and expenses, Agricultural Research Service":			
Direct appropriation	−618,393		
Reimbursements from non-Federal sources	−4,820		
Reimbursements from other accounts	−3,435		
"Salaries and expenses, Federal Extension Service"	−25,055		
"Salaries and expenses, Forest Service":			
Direct appropriation	−1,233,471		
Reimbursements from non-Federal sources	−969		
Reimbursements from other accounts	−8,022		
"Flood prevention, Soil Conservation Service":			
Direct appropriation	−1,443,381	−1,513,292	
Reimbursements from non-Federal sources	−3,449	−200	
Reimbursements from other accounts	−7,638	−12,425	
"Salaries and expenses, Office of Information, Agriculture"	−3,800	−3,800	
Total obligations	58,590,554	59,090,991	57,196,200

Note.—Reimbursements from non-Federal sources above are from State, county, municipal, and private organizations for soil and water conservation work rendered under cooperative agreements (5 U. S. C. 118e; 16 U. S. C. 590a–590f); from Government agencies, farmers, or other persons for reproduction of aerial and other photographs, mosaics, and soils, land-use, and other maps (7 U. S. C. 1387); and from proceeds of sale of personal property (40 U. S. C. 481 (c)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
Assistance to soil conservation districts and other cooperators	$56,345,326	$57,568,579	$55,696,200
Emergency channel restoration in flood-stricken areas	776,163	30,000	
Obligations under reimbursements from non-Federal sources	360,690	420,133	400,000
Total direct obligations	57,482,179	58,018,712	56,096,200
Obligations Payable Out of Reimbursements From Other Accounts			
Assistance to soil-conservation districts and other cooperators	1,108,375	1,072,279	1,100,000
Total obligations	58,590,554	59,090,991	57,196,200

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Summary of Personal Services			
Total number of permanent positions	12,546	12,333	11,824
Full-time equivalent of all other positions	652	580	486
Average number of all employees	10,744	10,623	10,149
Number of employees at end of year	12,284	11,840	11,385
Average salaries and grades:			
General schedule grades:			
Average salary	$4,488	$4,491	$4,516
Average grade	GS-6.4	GS-6.4	GS-6.4
Personal service obligations:			
Permanent positions	$45,536,991	$46,495,601	$44,884,096
Positions other than permanent	1,842,639	1,693,013	1,418,139
Regular pay in excess of 52-week base	181,504	186,681	189,676
Payment above basic rates	129,193	207,405	205,089
Other payments for personal services	28,000		
Total personal service obligations	47,718,327	48,582,700	46,697,000
Direct Obligations			
Personal services	47,394,011	48,292,500	46,417,000
Travel	1,623,793	1,650,700	1,655,000
Transportation of things	404,224	347,100	301,000
Communication services	672,740	655,000	650,000
Rents and utility services	1,133,548	1,225,000	1,200,000
Printing and reproduction	295,728	355,800	350,000
Other contractual services	1,401,636	1,072,167	1,106,950
Services performed by other agencies	22,950	66,100	65,000
Supplies and materials	4,726,004	2,623,600	2,628,000
Equipment	1,726,676	1,640,500	1,635,000
Lands and structures	3,716	1,500	1,000
Refunds, awards, and indemnities	3,128	300	250
Awards for employee suggestions	530	8,000	8,000
Taxes and assessments	78,916	85,500	85,000
Subtotal	57,487,600	58,023,767	56,102,200
Deduct charges for quarters and subsistence	5,421	5,055	6,000
Total direct obligations	57,482,179	58,018,712	56,096,200
Obligations Payable Out of Reimbursements From Other Accounts			
Personal services	324,316	290,200	280,000
Travel	20,578	17,500	16,000
Transportation of things	3,985	3,700	4,000
Communication services	1,339	1,900	2,000
Rents and utility services	53,479	54,800	51,000
Printing and reproduction	20	100	
Other contractual services	376,060	437,702	476,000
Supplies and materials	207,560	173,369	180,000
Equipment	120,903	92,708	91,000
Taxes and assessments	135	300	
Total obligations payable out of reimbursements from other accounts	1,108,375	1,072,279	1,100,000
Total obligations	58,590,554	59,090,991	57,196,200

Analysis of expenditures

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$5,801,843	$6,165,510	$6,250,181
Obligations incurred during the year	61,942,987	60,620,708	57,196,200
	67,744,830	66,786,218	63,446,381
Adjustment in obligations of prior years	−148,065		
Reimbursements	−1,497,398	−1,505,037	−1,500,000
Obligated balance carried to certified claims account	−43,789		
Obligated balance carried forward	−6,165,510	−6,250,181	−6,646,381
Total expenditures	59,890,068	59,031,000	55,300,000
Expenditures are distributed as follows:			
Out of current authorizations	59,890,068	53,432,000	49,700,000
Out of prior authorizations		5,599,000	5,600,000

Shift of Soil Conservation Service Work to Extension Service

Recommendations of Committee on Federal Aid to Agriculture

Mr. Whitten. Thank you, Mr. Williams.

There are one or two basic matters that I would like to go into with you. I called attention earlier to the recommendations of the committee on Federal Aid to Agriculture, submitted to the President's Commission on Inter-Governmental Relations sometime in 1954. As I am sure you are aware, those who are primarily interested in the Soil Conservation Service, including the many people belonging to the Association of Soil Conservation Districts, have been afraid that the Administration intended to do away with the Soil Conservation Service and to gradually transfer its activity to the Extension Department. I am sure you have had indications that many of them were disturbed in that direction.

Reading from the recommendation of the President's committee, it makes this recommendation after certain findings:

Consequently, the committee recommends that the function of soil conservation technical assistance be placed on a Federal-State, grant-in-aid basis. The committee recommends that the Soil Conservation Service be retained at the national level to (*a*) furnish national leadership and coordination of the grant-in-aid program and, (*b*) to carry out the responsibilities of the United States Department of Agriculture with regard to authorized watershed projects and work with other Federal agencies on river basin development and flood prevention activities. The committee (speaking of this advisory committee to the President) is firmly convinced that the implementation of the foregoing recommendation will result in (*a*) a system more consistent with the Federal-State relationships prevailing in other agricultural programs and more compatible with our Federal system of government; (*b*) greatly increase State and local financial and other participation in the soil conservation program; (*c*) greater financial and technical assistance to soil conservation districts and consequently greater final accomplishments in behalf of soil conservation generally.

In terms of further specifics the committee recommends that—

the transition to a grant-in-aid basis be effected along the following lines: (*a*) That transition be spread over a 5-year period. (*b*) During the first year, a transfer of SCS technicians from Federal to State roles with the States receiving 100 percent Federal grants during this period. (*c*) The second year providing for an adjusted matching arrangement between the Federal Government and the States. (*d*) The third and fourth year providing for a shift-over to an equalizing grant basis with Federal funds allocated on a formula, giving weight to such factors as area and type of farm act, farm population, per capita income, with a sliding scale running from one-third to two-thirds, depending on the State fiscal capacity, measured by State per capita income.

I raised this question earlier with top officials of the Department. They stated that the Department had not received this and was not a party to this proposed change.

I would like to point out to you, however, that perhaps the Bureau of the Budget is a party to it, insofar as some indications are concerned. For instance, last year we had quite a number of new soil-conservation districts, but instead of additional money being requested for those soil-conservation districts last year, there was a reduction.

Last year in the same budget, while they cut SCS when its workload was increasing due to the new districts, there was a request for the addition to the Extension Service of around $8 million.

In the use of that increase which was appropriated to the Extension Service, our investigators have learned that in certain key counties throughout the United States the county agents have been increased to 4 or 5. Perhaps I'd better read what it says in the report of the investigators—

> the pattern seems to be about the same in each State and in each of the new agents had assigned them 50 farm units. Each was given responsibility for working closely with these farm operators in the preparation of very comprehensive farm plans. To each of the home-demonstration agents had been assigned 100 farm units otherwise assigned to the new county agents.
>
> The work of these new home demonstration agents was obviously the planning of farm homes simultaneously with the planning of the farm by the new county agents.
>
> On the basis of information explained in the explanatory notes and discussion with extension personnel in various States, it is obvious that the goal is to extend the planning service in all counties throughout the Nation. If the ultimate goal is the assignment of 50 farm units to each county agent to the point of saturation, the 5 million farm units throughout the country would call for the employment of about 100,000 agents and 50,000 home-demonstration agents.

Now, the description of the activities in those new counties clearly shows that the work includes work of the Soil Conservation Service, to a considerable extent. That was part of an experimental program, a few counties in each State.

I am trying to see whether there is any evidence here that, instead of Department of Agriculture doing this, the Bureau of the Budget isn't doing it through the budget.

Then we turn this year and what do we find? We find, as you say, some 58 new soil-conservation districts to be formed, but no personnel for them. We find you have abolished the regional offices of the Soil Conservation Service. We find that there are further reductions in the funds for the Soil Conservation Service this year. We find that the budget once again has a $5,800,000 increase for the Extension Service, but a reduction of $1,872,379 here.

I ask you if there isn't some evidence in the facts that I have recited to you, which I don't believe can be questioned, that the administration is attempting to gradually dry up the Soil Conservation Service and shift its work to the Extension Service.

Mr. WILLIAMS. Well, I believe, Mr. Chairman, that there are various ways that the various things you have recited might be interpreted.

Mr. WHITTEN. I only mention it as some evidence thereof.

Mr. WILLIAMS. I might add this, that insofar as I am personally concerned, there is no intention to move in that direction, and I have every assurance, I think, of maintaining a strong Soil Conservation

Service. We want to have an efficient one and we want to carry on a strong and dynamic program.

I am not in too good a position to judge whether or not all of those pieces do fit together in that sort of a combination.

Mr. PETERSON. As I said when the Secretary was here, with respect to the task force report—that is the report to the Commission on Intergovernmental Relations—we do not know what position the Commission itself will take, and it is my feeling and the Department's feeling that it would be inappropriate for us to prejudice the Commission one way or the other by taking a position with respect to the task force recommendations prior to the time the Commission has reported.

Secondly, as I have been able to review the work of the Soil Conservation and the Extension Service, in the limited time I have been with the Department, it is my observation that there is more work for each of those agencies to do than they will have resources for in the near future.

I'll admit, as Mr. Williams has indicated, from the facts you have recited, there is the possibility of interpreting them in a number of directions.

Speaking for the Department of Agriculture, I have said and I think the Secretary has said repeatedly, that there is a need for soil conservation, and the Soil Conservation Service as an integral part of the Department of Agriculture, and we expect to see its work carried forward.

Mr. WHITTEN. To those who are already disturbed, this is further evidence to disturb them further. I just ask if these things don't indicate a pattern of trying to reach the objective in a different way than through the Soil Conservation Service.

Mr. PETERSON. There are many services which government can properly undertake and perform for farmers. So far as I see the Federal-State agencies within the Department and the others outside that group, there is a need for balance, and that again comes to this matter of judgment as to where balance is attained, budgetwise and otherwise, to carry the total program forward. There is room for differences in judgment but structurally it seems to me there is a good operating basis now within the several agencies that we have operating in this general area.

Mr. WHITTEN. I agree with you. I just say, though, that when one agency is put to doing it with farm planning and several new county agents are put in one county to do farm planning, it raises a question, since certainly that is the primary function of the soil conservation technician.

When you do it as intensively as you are in these few trial-run counties, when we find that for 2 successive years you have increased extension work so you can do more of that, and when in the same 2 years we find you are cutting SCS, it makes us wonder. And this cut in soil conservation is much more terrific than would appear from a comparison of the two sums of money. Moneywise, it is $1,800,000, but when you consider that you will add 58 new districts without any money for new personnel, it means that while you have given these trial-run counties 50 farm units to a county agent and given them several new county agents, you have spread the soil-conservation

technician thinner and thinner. You have given him a terrific area to cover.

Now, I think the record is clear. I voted against giving the Secretary of Agriculture the right to reorganize the Department. I did not especially have Mr. Benson in mind, though he and I do differ on a lot of matters of organization and things of that sort; but the law said, "The Secretary of Agriculture," and the sky is almost the limit as to what the Department can do. Of course, you and I both know there are lots of ways to do the same thing. One of them is to announce to the public: "We have abolished SCS." The other is to strangle it to death by spreading its agents so thin and putting somebody over here to take it over on a much more intensive basis, which will eventually cause the public to say, "We would rather do it this way, because we can get more people to do it."

I do not say those are the facts. But the facts I have presented here are those that have been presented to me. I want to know what they mean and whether either of you know if this means that we are moving in the direction that many of the farm representatives who have talked to me are fearful about.

Mr. PETERSON. With respect to farm planning, as I understand it, the soil conservation phases of farm planning are directed toward the capabilities of the soil of the farm. The soil survey is basic to the planning operation. And, then, the planning comes in with respect to the capabilities of that soil and Mr. Williams can correct me if I'm erroneous, but beyond that there is also all of the economic planning that needs to go into that farm—the available markets, the price trend, the transportation factors with respect to a bulky commodity, or a high-value commodity in ratio to bulk, and that sort of thing.

Now, the Extension Service—and I am speaking from experience in my own State—for many years has had specialists. They have approached farmers' problems as "a" problem and not as the problems of the farm, but as a problem with respect to a particular crop or a particular activity.

From the figures that I have seen, I believe the average is one extension agent for every thousand farms in the United States.

Now, I am aware that there are some pilot programs which have been carried on, having in mind what is called a farm unit approach, wherein the Extension Service through the county agent, tries to fit a particular problem of a farmer into the total problems of the operation of that particular farm, and I do not conceive it to be, nor does the Extension Service conceive it to be—the Federal Cooperative Extension Service—a displacement of that type of planning work for farmers, with the soil survey and soil capability type of planning work which the Soil Conservation Service is doing and has been doing since its inception.

Now, with respect to the new district—and again I will ask Mr. Williams to correct me if he will, if I have the wrong concept of this thing, but I have gone into it with Mr. Williams at some length.

In a new district where there has been no farm planning carried on, of course, the area is virgin. In the districts which have been established for many years there has been farm planning carried on to some degree throughout the time of the existence of that district. Now that planning on the individual farm is not repeated year after

year. There are needs for revision of plans as the farming pattern changes; there are needs for technical assistance in further extending the basic plan as it was originally made. The farmer develops that plan and develops his farm. It isn't a case where he would set up a plan for a farm and then have to do that year after year. You have your personnel and technical resources which you move from point of need; when that need is filled, to the next point of need. These new districts will have planning assistance through the soil-conservation personnel.

Mr. WHITTEN. Thank you. That is quite a comfort. I would have to say that, if this budget reflects the views of the Department, you place a lot more value on the Extension Service than you do on Soil Conservation Service.

Mr. PETERSON. I'll have to differ on that, Mr. Chairman.

Mr. WHITTEN. I hate to compare them. I am for both of them.

Mr. PETERSON. Certainly I am also, Mr. Chairman, and I feel that the Department values both of them highly and equally.

They are different areas of responsibility and different problems that each are attacking, which are a part of the total problems of the man on the land who runs the farm.

Mr. WHITTEN. What is your plan on Extension Service, where you have taken this money and put 4 or 5 extra agents in a particular county? Where will it end? Is it going up to 100,000 county agents in the country?

Mr. PETERSON. I think any such view would be totally unrealistic.

Mr. WHITTEN. If you multiply them by the number of counties, you can get that figure.

Mr. PETERSON. There is always need to seek the most efficient method of finding ways of handling the land. When you speak of research, normally you think of production research. You have the irrigation developing in the East and the many things in farm management that shift when you shift from an irrigated to a nonirrigated farm. The changes in management that take place when you go from a nonuse of commercial fertilizer to an intensive use of commercial fertilizer and so forth.

Mr. WHITTEN. You are talking to a committee that already believes that. I don't question that in the least. I am just talking about the policy of putting 4 or 5 agents where you have had 1, at the expense of not providing technicians for new soil conservation districts.

Mr. PETERSON. That is one viewpoint that has validity, but we feel we are not doing one thing at the expense of another. We are trying to seek balance in the total program as it goes forward, admitting that none of the programs exist which I know of which couldn't be further intensified. It becomes then a matter of judgment as to what point you are able to go in any given year.

Mr. WHITTEN. Thank you, sir.

Mr. Marshall, do you have any questions?

ADEQUACY OF NUMBER OF PERSONNEL IN DISTRICTS

Mr. MARSHALL. Mr. Chairman, last year when the Soil Conservation Service was before our committee, I expressed some concern

because of the lack of clerical assistance in the counties. Has that situation changed any during the past fiscal year?

Mr. WILLIAMS. It has in some localities, Mr. Marshall, but not in terms of a volume change of any kind. I would like to mention in that regard that there are some States, particularly Iowa, and Oklahoma as examples, where State legislatures have given funds to do some work and that has helped, but we have not been able to—we haven't felt it desirable in terms of a balance between technical people and clerical people, to make any large switch, but we have in particular localities where we are particularly short.

Mr. MARSHALL. One of the things that troubled me about the work with the Soil Conservation Service has been this backlog of farm planning that remains to be done. Where the farmer has asked for assistance, we are back in instances of a year or a year and a half, and it gets discouraging to him.

I appreciate that that is something that isn't easily answered, because of the limitation of the budget as far as you are conserned. The problem of getting the work done isn't complete by any means. I'm sorry to see the adjustment made and cutting down the personnel for the soil conservation districts.

I was under the impression that there was some thought being given when the work at the regional office was being discontinued, that it wasn't a matter of cutting down the appropriation for the Soil Conservation Service, but it was a means whereby that money might be shifted to relieve some of this problem. When the budget comes before us this year we find that you can hold out little hope for these newer districts for more assistance. That troubles me.

Do you see in this budget where there is any latitude, whereby a situation like we have might be relieved?

Mr. WILLIAMS. Mr. Marshall, we are not increasing the number of technicians, obviously. It is proposed in 1956, with additional districts to serve, that the ones that will be served will be spread somewhat thinner than they were before in order to give some degree of assistance in the district. We have employed personnel to the limit of our resources at the present time in the existing number of districts.

We do feel this, however, that in examining the work units in various sections of the country, that we find some work units where the workload can be adjusted. We can adjust the people with respect to the workload in that location and shift some people to this watershed activity, and we hope in that way to be able to service the new soil-conservation districts that are coming in.

I think we have been able to reasonably well service the new districts that have been organized in Minnesota—and incidentally Minnesota has been one of the leading States this last year in the organization of new districts. I suspect that not all of the districts feel that they have all of the assistance they need, but I think we have reasonably well taken care of them up to this time. I would anticipate that in order to service the further new districts that are being organized now in Minnesota and projected for next year, it would have to come about from a shift from older districts where the workload is not so great as where the people are interested in proceeding in a new district.

Mr. MARSHALL. It seems to me that the Soil Conservation administrative setup isn't as efficient as I would like to see it, because many times we have a man who is a trained technician doing clerical work. I have repeatedly asked people, "Why do you have to do this?" and they say, "There is nobody available to do it, so we have to do it."

Now, it seems to me that there ought to be some way that Federal agencies could pool their efforts as far as stenography is concerned. I know of a number of instances—and I am not saying this with regard to one agency any more than another, but I think agencies like the Extension Service, the Farm Home Administration, the Forest Service, and all of them are serving a worthwhile purpose but it is certainly out of balance when you get out in the counties where you see clerical service in addition to what one agency appears to need, where the other agency doesn't have this assistance.

Isn't there some way the Department can pool the services of persons doing stenographic work, to relieve that kind of a situation?

Mr. WHITTEN. If you will pardon me, a few years ago this committee insisted that some efforts be made in those places where it was not costly, or where it could be done at a saving, to bring the various Federal agencies in a given locality into the same building, where they could make joint use of stenographers, clerical hire, and telephone. Some progress was made. However, I would like to point out that the Extension Service is a separate and independent agency of the Department of Agriculture, that operates on a memorandum agreement. It is not a Federal agency, insofar as forcing a sharing of their stenographic or clerical hire. I am sure you are aware of that, but I just wanted to point it out.

Mr. WILLIAMS. Did you want me to comment on that?

Mr. MARSHALL. Yes, I would like for you to comment on it.

Mr. WILLIAMS. I have observed this in many, many locations myself that where it was convenient at the county level to have the housing of the county ASC committee and the FHA occasionally, and the SCS in the same building or maybe even on the same floor of the same building, that they have it there, and have just a practical working arrangement to work that thing out so they are sharing to some extent.

A great deal—in fact, a very high percentage—I don't know what it is—maybe Mr. Dorny could give us some idea—of the clerical help at the county level is part-time clerical help. We employ a local girl or married lady to work a few hours a week to take care of some of that office work.

Then, there have been a few instances in which with the rather large workload on the ACP activity in certain counties, that county ASC committees have been very willing to take over some of that load of clerical work that might otherwise fall on the technicians.

I suppose we try many different ways of handling this throughout the country. It is difficult, of course, where the agencies are housed separately, either in separate towns or separate buildings, to work that out very effectively, and that is just a practical problem involved.

I expect you have to weigh the cost of joint housing with the costs of rentals and a lot of other factors in determining whether you would be ahead to have some joint clerical help at a given location, weighed against some other advantages or disadvantages that might be present.

QUESTION OF PERSONNEL SERVING MORE THAN ONE AGENCY OF THE DEPARTMENT

Mr. MARSHALL. What is the possibility of the Department of Agriculture making it possible for a Soil Conservation Service man, a Farmers' Home Administration man, to do some of the work jointly? In place of having 2 men, requiring a considerable amount of travel, it might be done in that particular county by 1 man.

Would you have any thoughts along that line?

Mr. WILLIAMS. We are actually doing that in a few cases. It doesn't happen to be a Farmers' Home Administration man, but with the county extension agents.

In Massachusetts we have a joint employee serving both as a county agent and as a work unit conservationist, in one of the soil-conservation districts where the workload of both activities is not a full-time workload. They just set that up here a few months ago. I don't know how it is going to work out in all details. They are doing a little of that out in Alaska where farms are scattered and there isn't a full-time workload for either party.

Perhaps there are some other locations where more of that can be done. I would hesitate to give it an all-out recommendation until I see that it can be made to work effectively that way. Perhaps it would work a little better in the combination of the extension agent and SCS man, than it would Farmers' Home-SCS. I am not sure of that. There may be possibilities in exceptional cases.

Mr. MARSHALL. As a farmer, I am primarily interested in doing something to improve the so-called action part of our programs.

I have been one of those who has regretted seeing some of the emphasis taken off of the action programs to be placed over in other fields which are not quite so closely connected with my income-making possibilities. The work of the Soil Conservation Service has certainly been meeting the approval of people, from the way they have responded.

PROPOSED RETIREMENT OF CERTAIN LANDS

Mr. Andersen, my colleague from Minnesota, the former chairman of this committee and I, introduced a bill jointly to do something about these diverted acres. Has the Soil Conservation Service given any attention to the bill we have introduced in this session?

Mr. WILLIAMS. Yes, they have, Mr. Marshall. During the past 10 days or 2 weeks—I don't recall the exact date it came in so I am not sure about that time interval, but we have studied the provisions of that bill to some extent and while so far as I know the Department has not taken any official position or made any report on it yet, we feel there is one aspect of the bill that is especially commendable and that is that it gives specific emphasis to conservation. I suspect that there may be some questions. Perhaps there are even some questions in your own mind as to how some of the features would actually work out.

Dr. Kellogg has studied that quite a little and perhaps he would have a comment on it. Mr. Kellogg——

Mr. KELLOGG. As I looked over the bill, Mr. Marshall, it certainly would seem to have the effect of encouraging farmers to put their lower yielding land, their less good land, into protective cover. Now,

how that would work out nationally, it is a little hard to say, because in a place like north-central Iowa, on a good farm there, it would take out some good land. I think the total national effect would be to move in the right direction, but it is a little hard for me to predict how that would work out, say, in the Great Plains or in the South.

Mr. ANDERSEN. On that point, Doctor, the intent of the bill is that good producing acres of land, only, shall be considered in taking land out of production; is it not, Mr. Marshall?

Mr. MARSHALL. Yes.

Mr. KELLOGG. I wasn't sure about it from reading the bill. I am glad I asked that question.

Mr. MARSHALL. That is why we put into the bill the relationship between the productivity and the payment, in order that we could see that proper payment was given to the high-producing land as compared with the lower producing.

Mr. KELLOGG. As I read the bill—of course, not having your views thoroughly in mind—it seemed to me that there would be perhaps more advantage in the plan for the farmer on the low-producing land, in contrast to the man on the high-producing land.

Mr. MARSHALL. There wouldn't be if the productivity figures that the Department of Agriculture has are properly set up. If they are not properly set up in relation to the productivity between counties, then I would grant immediately that you would be right; but if their productivity figures are anywhere near right, that would mean that in the payment, payments would be larger to the counties with the highest productivity.

Mr. KELLOGG. I was thinking of farmers within the county, sir. That is, there is quite a little variation among farms within a county.

Mr. MARSHALL. There could be and ought to be properly an adjustment by the administrators of the program, so it is broken down to farms within the county as well.

Mr. KELLOGG. Well, that is a question that the bill did seem to me to leave open.

Mr. ANDERSEN. Speaking again about marginal land under the proposed bill, which Mr. Marshall and I had no intent of advancing, nevertheless. I do find in the press the other day a suggestion by the Walton League that 60 million acres of land be taken out of production. They refer entirely to marginal land. They suggest that a payment of $7.50 an acre, on an average, be considered. In other words, involving $450 million a year for the retirement of 60 million acres of land. Well, now, that is their viewpoint. Now, that is not what I personally had in mind.

Mr. KELLOGG. No, I didn't gather that, sir.

Mr. ANDERSEN. Nor Mr. Marshall. We had in mind taking out of production average good crop-producing land on a voluntary basis. By placing it on a voluntary basis, it would not be necessary to deal with perhaps more than 20 or 30 percent annually of the farmers in any particular county, because one farmer, A, might be perfectly willing to take out of production 100 acres, for example, of his 400, thus not making it necessary for neighbors who have only 80 acres of land to reduce at all. And that is why I am personally insisting that the entire thing be on a voluntary basis. It is workable on a voluntary basis and we can through such a basis secure all necessary land that we would want to take out of production.

Go ahead, Mr. Marshall. Excuse me for interrupting.

Mr. MARSHALL. We are interested in saying that this land retired last carried out on it good, sound, proper, conservation features.

Mr. KELLOGG. That was another question I wondered about in reading the bill and studying it myself. If we take land in your area, Mr. Marshall, it is a fairly easy matter to get a good cover. On the other hand, on some of the land in some southern areas, to get a good, permanent grass cover is a fairly expensive undertaking—for the lime, the phosphate, and the seeding. Farmers there have somewhat more difficult conditions than you have. There would be some advantage in getting good cover in your area over what there might be in other areas. I wasn't clear how that would be adjusted, even with ACP cost sharing.

Right along that same line, Mr. Marshall, I think farmers would be interested in what length of time you anticipate the operation of the program would require. I think wheat farmers particularly would be concerned with that because, as you know, a good deal of the what in the marginal part of the Great Plains, for example, is grown under the fallow system. The farmer has a 2-year cycle as a very minimum.

Further, if we take a wheat farm in a relatively dry area and look to its transfer to a livestock farm, normally the farmer will have to enlarge his unit quite a bit. Thus, I think the wheat farmer would be interested in a rather long view of the operation of such a program.

Mr. ANDERSEN. I think you are right, Doctor, and my answer to your query on that point would be that the whole law, if it does become a law—and of course it would have to be an act of Congress, through the legislative committees—would have to be very elastic, as far as the various regions of the Nation were concerned. You cannot set down any one principle in Minnesota, where a 5-year cycle would suit us, that would necessarily suit western Kansas, or somewhere out in the Dust Bowl, because it simply would not. It would require considerable study. But, I do want to reiterate why we are bringing this up, and that is, first, doing something about preventing the further accumulation of surplus farm products today, which is quite a headache to the Department of Agriculture and everybody concerned, and, second, in the same program building up our soils for the benefit of generations to come.

I wouldn't want, however, to lose sight of the fact that the basic purpose of my line of reasoning in regard to this—and I think Mr. Marshall will agree with me—is to help solve our surplus problem. That is the one big thing involved. We can afford to spend, through such a program, quite a sum of money and still in the final analysis not spend half as much as we will by storing millions of bushels of grain which are produced unnecessarily, and further which result in unnecessary mining of the soil. This, of course, is beyond your scope of authority, Mr. Kellogg.

Mr. KELLOGG. Yes, Mr. Andersen, we in the Soil Conservation Service are not qualified to deal with the question of agricultural surpluses.

Mr. MARSHALL. If you will yield to me at that point; of course in my particular area, the farms that are producing the heaviest crops are those farms that are more rapidly depleting their soil elements.

Mr. KELLOGG. That is sometimes the case, and the phase of the proposal that we have directed our attention to is the conservation phase and the great need for cover on land that is taken out of use. We do feel those objectives are important.

Mr. WHITTEN. Gentlemen, the committee will adjourn until 1 o'clock, Monday.

MONDAY, FEBRUARY 14, 1955.

Mr. MARSHALL. The committee will come to order.

When we concluded last Friday, the questioning rested with you, Mr. Natcher. You had some questions on the general statement of Mr. Williams.

SOIL CONSERVATION WORK IN KENTUCKY

Mr. NATCHER. Mr. Chairman, Soil Conservation Service means a lot to the farmers of this country. For instance, in Kentucky, I believe some 122 soil-conservation districts exist at the present time. The soil-conservation funds available to the State of Kentucky during the present fiscal year amounted to $1,300,000 and in reality we needed about $500,000 more in order to have two men located in each soil-conservation district. This would have increased the amount, Mr. Chairman, to about $1,800,000.

COST-SHARING IN ADMINISTRATION OF THE WATERSHED ACT

Mr. Williams, I believe the President by Executive Order 10,584 on December 18, 1954, set up general rules and regulations relating to the administration of the watershed protection and flood prevention, the Watershed Protection and Flood Prevention Act, known as Public Law 566. This Executive order contains the statement, according to my information, that this order would soon be supplemented by a policy statement to be issued by the Secretary. Has such a policy statement been issued?

Mr. WILLIAMS. No, sir; it has not.

Mr. NATCHER. Mr. Williams, do you have any information at all as to the percentage of the funds that will be required on the part of the States and the local people under such a policy statement when issued by the Secretary? Do you have any information at all along that line?

Mr. WILLIAMS. That matter of cost sharing under the proposed policy is one which has been given extremely careful study and I think that in the final analysis it will probably be similar to our pilot watershed arrangement. We are looking at it this way, that where the benefits from the work are definitely attributed to a local situation, that the local people should recognize that point and share substantially in that cost. But the exact formula has not been spelled out and we doubt very much that it is possible to spell out a mathematical formula that would be equitable betweer different watersheds. So I think at the present time that we need to say that the same principles will be recognized as are recognized in our pilot watershed approach. Certainly I do not think that the Federal Government

would normally anticipate carrying in excess of perhaps half of these costs. If there were special circumstances, such as direct Federal benefit, beyond what would be a normal case, such a situation will be worked out equitably on the particular project. But so far, our position has been that we need to have flexibility as between the types of projects and we need to recognize the principle that the beneficiaries should share in the cost proportionately with the benefits that they get.

Mr. NATCHER. In other words, in order to keep the record straight, what is the percentage under our pilot setup at the present time?

Mr. WILLIAMS. Of course, that varies by projects, but for the 60 pilot projects as a whole, it is running about 52 percent non-Federal and about 48 percent Federal. That counts all of the work that is included in the work plans. But some projects run more than that in local sharing of costs. Some run heavier in Federal contribution.

Mr. NATCHER. According to your statement, then, Mr. Williams, we could expect a policy statement of the Secretary to ask for at least 50 percent as far as the State or the local people are concerned?

Mr. WILLIAMS. I doubt very much that it would be possible to fix that specifically on a 50 percent proposition. Maybe Mr. Peterson would like to comment on that further, too.

Mr. NATCHER. We would like to hear from you.

Mr. PETERSON. There are two approaches to the matter of cost sharing. Before accepting either, I think we have to recognize that once these projects are authorized and completed, the statute places the responsibility upon the local organization for the operation and maintenance thereafter. Therefore, it would seem ill-advised to adopt a policy of cost sharing which was so liberal that of itself it would encourage projects which may not have the closest scrutiny of the local people in proposing them. As opposed to that, we should neither adopt a policy which would place such burdens upon the local people that would defeat the purpose of the act in stimulating the approach it makes to watershed protection or which would result in no projects or few projects coming forward. We have therefore sought or endeavored to seek a middle ground and have approached it by trying to provide that, first, the benefits that can be definitely attributed or identified to the local people should be paid for by the local people. Then we have said that we would try to approach a sharing on the basis of an equitable sharing, 50–50.

As Mr. Williams pointed out, with all of the various conditions throughout the United States, the variables in individual watersheds, somewhere the Federal interest is predominant; somewhere the local interest is predominant. We are trying to set up guidelines so there is flexibility sufficient to recognize those variable interests, and at the same time approach a middle ground between the extremes I mentioned in the cost-sharing proviso.

WATERSHED WORK IN KENTUCKY

Mr. NATCHER. As I understand, Mr. Peterson, in the State of Kentucky at the present time, for instance, we have applications for 132 watersheds. These applications have been submitted since the passage of the act on August 4, 1954. Do either one of you gentlemen have information and can you inform me as to how many of these

watershed applications have been authorized just for the State of Kentucky?

Mr. WILLIAMS. Yes, we have that information here. Mr. Brown can probably answer that quicker than I could.

Mr. BROWN. Mr. Natcher, all of those applications have been approved by the State agency in Kentucky and have been submitted to this office. We have designated two of those watersheds for surveys and investigations to determine the feasibility of the work plan.

Mr. NATCHER. Can you tell me what your second one is? As I understand, Canoe Creek Watershed District in Henderson County is one of those that has been approved. Can you tell me the other one?

Mr. WILLIAMS. Twin Creek in Harrison County.

Mr. NATCHER. Now, gentlemen, several days ago I took up with Mr. Peterson here and the Secretary the question of the Mud River watershed, Cypress Creek watershed, Meadow Creek and the Big Reedy. There are 6, as I understand, that were approved in the State of Kentucky by the State conservationist, Mr. Gayle, on January 20, and it seems that the Corps of Engineers filed a memorandum in 2 of these projects, one the Muddy River, and the other, Cypress Creek, stating that heretofore projects have been approved which might conflict with these two particular watersheds projects and, in addition, the overflow from Green River might conflict.

CORPS OF ENGINEERS' MEMORANDUM TO DELAY WATERSHED PROGRAM

Now, I am pointing this out not only from the standpoint of these particular watersheds and from the standpoint of Kentucky, but the same thing might exist in other States. The Corps of Engineers' memorandum has reference to Mining City Dam—that is a high dam that will never be constructed in the Second Congressional District of Kentucky. The Department of the Interior is against it on account of Mammoth Cave National Park. It takes about a third of two of my counties, and it takes a great portion of my home county. Therefore, Mr. Peterson, I do not think it is going to be constructed for a while. I point this out for this reason: This memorandum filed by the Corps of Engineers should not stop these projects because the two matters referred to have nothing whatsoever to do with these particular watersheds, in my opinion.

Mr. Peterson, you were nice enough to check that matter for me, and I presume that within the next few days I will hear something about it.

Mr. PETERSON. You will get the letter in response to your request, Mr. Natcher. It was prepared, and I thought on reading it over that it did not quite have the detail I thought it should have so I asked for further detail, and it is now being rewritten with the additional detail I thought you were interested in.

Mr. NATCHER. I appreciate that. This same condition might exist in other States where the Corps of Engineers has filed some sort of a memorandum that could hold up these projects when it really has no merit.

Mr. ANDERSEN. Will you yield there, Mr. Natcher?

Mr. NATCHER. Certainly, sir.

Mr. ANDERSEN. As I have said perhaps previously in these hearings, I think you are absolutely right on that question. I do not think that it is up to the Corps of Engineers in any way to set aside the decision of the various State agencies as to whether a watershed protection program is good or not.

Mr. PETERSON. It is our view, Mr. Andersen, and as the act itself provides, that the States should determine as they do determine what is useful and beneficial in the State.

Mr. ANDERSEN. Certainly. Just because for 15 years back the Army engineers have had an authorization from the Congress to go ahead with some project which might conflict, I think the action of the State agencies should take precedence. I am just expressing my personal viewpoint.

Mr. NATCHER. I certainly want to agree with you, Mr. Andersen. I think you are definitely correct.

Mr. Chairman, that is all I have.

Mr. MARSHALL. Mr. Andersen.

Mr. ANDERSEN. Mr. Chairman, I have a series of questions I want to ask at this point relative to the Soil Conservation Service budget before us.

Mr. NATCHER. Would you pardon me just 1 minute?

EXECUTIVE ORDER RELATED TO WATERSHED ACT

Mr. Chairman, I referred to Executive Order 10584. I ask, Mr. Chairman, that a copy of this order be inserted in the record if one of you gentlemen would be kind enough to include some with your testimony.

Mr. MARSHALL. If there is no objection, it is so ordered.

(Executive Order 10584 is as follows:)

EXECUTIVE ORDER 10584

PRESCRIBING RULES AND REGULATIONS RELATING TO THE ADMINISTRATION OF THE WATERSHED PROTECTION AND FLOOD PREVENTION ACT

By virtue of the authority vested in me by the Watershed Protection and Flood Prevention Act, and as President of the United States, I hereby prescribe the following rules and regulations relating to the administration of the said Act:

SECTION 1. *Scope of order.* This order shall apply (a) to the planning, construction, operation, and maintenance of all works of improvement under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, approved August 4, 1954; 68 Stat. 666), hereinafter referred to as the Act, and (b) to other programs and projects of the Department of Agriculture, and to programs and projects of the Department of the Interior and of the Department of the Army, to the extent that such programs or projects affect, or are affected significantly by, works of improvement provided for in the Act.

SECTION 2. *Department of Agriculture.* The Secretary of Agriculture shall have the following-described responsibilities with respect to works of improvement under the Act:

(a) Approval or disapproval of applications for Federal assistance in preparing plans for works of improvement, and the assignment of priorities for the provision of such assistance.

(b) Notifying the following, severally, in writing of all approvals or disapprovals of applications for planning assistance: the sponsoring organization, the State Governor or Governors concerned, the Secretary of the Interior, the Secretary of the Army, and other Federal agencies concerned.

(c) Notifying in writing the Secretary of the Interior and the Secretary of the Army and other Federal agencies concerned of his decision to initiate any survey or field investigation involving water-resource development work, and furnishing

the Federal agencies concerned with appropriate information regarding the scope, nature, status, and results of such survey or investigation.

(d) Submitting plans for works of improvement to the State Governor or Governors concerned and to the Federal agencies concerned for review and comment, when the Secretary and the interested local organization have agreed on such plans; and, when and as required by the Act, submitting such plans to the Secretary of the Interior and the Secretary of the Army for their review and comment prior to transmission of the plans to the Congress through the President.

(e) Establishing criteria for the formulation and justification of plans for works of improvement and criteria for the sharing of the cost of both structural and land treatment measures which conform with policies established by or at the direction of the President for watershed protection, flood control, irrigation, drainage, water supply, and related water-resource development purposes.

(f) Establishing engineering and economic standards and objectives, including standards as to degrees of flood protection, for works of improvement planned and carried out under the authority of the Act.

(g) Determination and definition of (1) those land-treatment measures and structural improvements for flood prevention and measures for the agricultural phases of conservation, development, use, and disposal of water which are eligible for Federal assistance, and (2) the nature and extent of such assistance and the conditions under which such assistance shall be rendered.

(h) Planning and installing works of improvement on public lands under his jurisdiction, and arranging for the participation of other Federal agencies in the planning and installation of works of improvement on public lands under their jurisdiction.

(i) Consulting with the Tennessee Valley Authority with respect to any survey or field investigation involving water-resource development work in the Tennessee Valley, and continuing such consultation throughout all phases of project development.

(j) Holding public hearings at suitable times and places when he determines that such action will further the purposes of the Act.

SECTION 3. *Department of the Interior.* (a) The Secretary of the Interior shall notify the Secretary of Agriculture and the Secretary of the Army, and other Federal agencies concerned in writing of his decision to initiate any survey or field investigation involving water-resource development work, and shall furnish the Federal agencies concerned with appropriate information regarding the scope, nature, status, and results of such survey or investigation.

(b) The Secretary of the Interior shall cooperate with the Secretary of Agriculture in assessing the need for works of improvement under the Act on Federal lands under the jurisdiction of the Department of the Interior. Recommendations of the Secretary of the Interior for necessary work on such lands shall be submitted as an integral part of the plans of the Department of Agriculture for works of improvement. Arrangements for construction, operation, and maintenance of works of improvement on such lands shall be mutually satisfactory to the Secretary of Agriculture and the Secretary of the Interior.

SECTION 4. *Department of the Army.* The Secretary of the Army shall notify the Secretary of Agriculture and the Secretary of the Interior and other Federal agencies concerned in writing of his decision to initiate any survey or field investigation involving water-resource development work, and shall furnish the Federal agencies concerned with appropriate information regarding the scope, nature, status, and results of such survey or investigation.

SECTION 5. *Relationship to comprehensive development.* (a) The Secretary of Agriculture shall submit plans for installation of works of improvement under the Act to the Congress through the President only if the Secretary is satisfied that such works constitute needed and harmonious elements in the comprehensive development of the river subbasin or river basin involved.

(b) Federal agencies having responsibilities for water resource developments shall, in the design and justification of works of improvement, take cognizance of all upstream and downstream works in place and in operation, or soon to be brought into operation. The guiding principle shall be to adjust the nature, capacity, and operating characteristics of works of improvement in a manner that (1) reflects the respective contributions of upstream and downstream works to flood protection and to the conservation, development, use, and disposal of water, and (2) provides the best use and control of water resources at minimum cost. Whenever approximately equivalent benefits can be obtained from alternative works of improvement, or combinations of improvements, with approximately the same cost, the alternative or combination least costly to the Federal Government shall be given preferential consideration. In case benefits are produced

jointly by more than one work of improvement, or in case complementary relationships exist between the projects and plans of the several agencies, the benefits claimed in justification of a system of improvements shall not include any duplication or compounding of benefits.

SECTION 6. *Basic data.* In the utilization of existing basic physical and economic data, and in the acquisition of additional basic data required for planning, design, construction, operation and evaluation of works of improvement authorized under the Act, the Department of Agriculture shall be assisted by the principal basic-data collection agencies, including the Geological Survey in the Department of the Interior and the Weather Bureau in the Department of Commerce. The basic-data collection agencies shall assist and cooperate with the Department of Agriculture with respect to the following:

(a) Provision of pertinent information in the preliminary planning of works of improvement.

(b) Collaboration in planning programs of hydrologic-data collection in project areas, in the selection of station sites and installation of equipment for collecting hydrologic data, and in the collection of such data.

(c) Collaboration in the analysis and interpretation of hydrologic data collected specifically for projects initiated under the Act, and of relevant data which may contribute to an analysis of the effects of such projects.

DWIGHT D. EISENHOWER.

THE WHITE HOUSE,
December 18, 1954.

INCREASES AND DECREASES IN 1956 BUDGET

Mr. ANDERSEN. Mr. Chairman, I am disturbed at the evident insistence of the Bureau of the Budget year after year in going against the decided intention of the Congress in seeing to it that such appropriations as necessary be made to take care of the new districts which might come into being in the next ensuing year. That has been a matter of controversy before this subcommittee during the 10 years that I have been on this particular subcommittee. I see that the budget this year suggests for fiscal 1956 a decrease of $1,872,379 for conservation operations. I notice on page 206 of the justification where these four proposed decreases are set forth. We find that $600,000 is proposed in the line of a decrease due to proposed elimination of some area offices in States where it is practicable to adjust area boundaries; another $500,000 decrease is surmised to be due to simplification and the standardization of cartographic techniques and procedures. Another $752,379 decrease is justified—

due to reassignment of personnel to work on other Soil Conservation Service programs and consolidation of some work units—

and the final item of $20,000 has to do with the nursery operations. I do not have any objection to the $20,000 decrease. But I do have definite objection, Mr. Chairman, to the decision of the Budget to bring before the Congress a proposal which calls for a total decrease, outside of nurseries, to the extent of $1,852,379 for what is known as conservation operations.

I have a few questions that I wish to ask on this of Mr. Williams and Mr. Wheeler, but first let me call to the attention of you gentlemen and for the record the fact that last year the Congress refused to agree to similar decreases in the budget for this year and insisted on the insertion of $2,190,000 above the budget for the staffing of 76 anticipated new soil-conservation districts. Furthermore, we insisted on the insertion of $1,077,000 for the continuance of the area offices upon the basis of what we considered to be approximately correct from the experience of previous years, service upon this subcommittee.

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AMOUNT REQUESTED OF DEPARTMENT BY SCS

Mr. Wheeler, I want to ask you this specific question: Exactly what figure did the Soil Conservation Service give as an estimate to the Department for their needs for 1956?

Mr. WHEELER. The estimates submitted to the Department by the Service proposed an increase of $14,039,329 above the 1955 appropriation.

Mr. ANDERSEN. That is a considerable increase.

Mr. WHEELER. Yes, sir.

Mr. ANDERSEN. Evidently, it was the opinion of the men, who are supposed to know, that the work of this particular agency is so essential that it requires not a decrease but a considerable increase for their operations for fiscal year 1956, is that not correct?

Mr. WHEELER. Yes, sir.

Mr. ANDERSEN. Mr. Williams, how can you service more districts and more district cooperators with a reduction in funds for the assistance to districts?

Mr. WILLIAMS. As pointed out here the other day, when the shifts are made between the assistance to districts and the watershed project activities, it will mean that we will have to reduce the amount of assistance per soil-conservation district, in order to provide resident assistants to the new districts.

In other words, we have obligated our present funds to the present number of districts, and to serve any increase in numbers of districts beyond that which we are servicing will automatically mean that we will have to withdraw personnel from other districts.

Mr. ANDERSEN. Naturally, there is no other answer.

Mr. WILLIAMS. That is right, sir.

Mr. ANDERSEN. Now, referring to the estimates concerning which I questioned Mr. Wheeler, you evidently had something to do with the making of those estimates originally. Can you give to the subcommittee your line of thinking why that $14 million increase was necessary for this work?

Mr. WILLIAMS. Yes, sir.

Mr. ANDERSEN. Do you have something you would like to say as to your recommendations along that line?

Mr. WILLIAMS. On this particular item, Mr. Andersen, we asked our State conservationists in all of the States about a year ago now or a little later, to submit to us their best estimates of the needs with respect to staffing of the soil-conservation districts then in existence plus the ones that were anticipated during the fiscal year. Those estimates were supplied and we summarized them and built a table which consisted of the total representation of needs from the field. That total list of needs amounted to something over $15 million beyond the level at that time. After reviewing that estimate here in the Washington office, we felt that they had been somewhat overoptimistic on the number of new districts that might be organized in 1956 and on other adjustments that might be made. So we cut that field estimate back about a million and a half dollars to $14 million plus and included that in our agency estimate to the Department.

The specific justification for that particular item read as follows:

Assistance to soil-conservation districts and other cooperators, an increase of $14,159,329.

That was in comparison with the House bill which at that time had been passed but the final act had not been passed.

The increase would provide staffs to assist newly organized soil conservation districts and would enable stepping up the rate of soil surveys, farm and ranch conservation planning, and land treatment assistance in presently organized soil conservation districts where there is a large backlog of conservation work and pressing need for action (a total of 2,750 districts are expected to be organized by June 30, 1956). There is a great need for moving ahead faster with the inventory of the soil resources of the country, especially in the critical areas such as the southern Great Plains, and for providing for more rapid publication of the survey reports and maps. About $3 million of the increase has been earmarked for this purpose. The nursery estimate has been increased by $105,000 to cover possible continued operation for observational planting materials production of the four nurseries which have not yet been turned over to State or local agencies. The remaining eleven-million-odd dollars is for increasing the farm and ranch conservation planning and land treatment assistance, including required cartographic services to cooperators. The estimate does not provide funds needed to meet all demands being made on the service by soil conservation districts, but it does include the amount that could be effectively and efficiently utilized considering availability of technical personnel and other factors.

That was the justification for the agency estimate.

REASONS FOR DEPARTMENT CUT IN SCS BUDGET

Mr. ANDERSEN. Thank you, Mr. Williams.

Now, Mr. Wheeler, on what basis did the Department determine to reduce this particular item below last year's level?

Mr. WHEELER. Mr. Andersen, of course there were a number of considerations involved in working out the estimates that went to the Bureau of the Budget.

Mr. ANDERSEN. First let me ask you this. What estimates did you send direct to the Bureau of the Budget from the Departm ent?

Mr. WHEELER. We sent the same amount that is in the budget estimate.

Mr. ANDERSEN. That the budget has allowed?

Mr. WHEELER. Yes, sir.

There were a number of factors involved in adjusting the amounts that we received from the agencies into the amount finally submitted to the Bureau of the Budget. The amount submitted by the agencies in the aggregate far exceeded the amount which could be approved under the ceiling given the Department. In fact, the agency estimates were about $94 million more than the Department submitted to the Budget Bureau.

In the case of the Soil Conservation Service, the Department felt that some of the proposals which had been advanced in the 1955 budget were sound and that the administration should again suggest those changes to the Congress. However, in working with the Service, a number of modifications were worked out which resulted in the budget you have before you. For example, the Service, as we indicate in the justifications, is now far along in a study of the cartographic work, and the indications are strong that considerable savings can be made in that work by standardizing and simplifying the forms and the maps that are produced. The savings that are expected to result from that were taken into account.

With respect to the area offices, the proposal last year was a reduction of somewhat over $1 million. It was felt that——

Mr. ANDERSEN. At that point, of course, you remember that last year this subcommittee and the Congress stated in its report, page 8 of the report:

> The committee does not agree with the proposed reduction in the number of area field offices and has restored $1,077,671 to provide for continuation of the present offices.

Now, will you discuss that along with your further remarks, Mr. Wheeler?

Mr. WHEELER. Yes, we were aware that Congress restored those funds and wrote that in the report.

Mr. ANDERSEN. Might I interject? In spite of that, being aware as you undoubtedly were of our action, yet the Department insists on going its own way and further decreasing the number of area offices even though it is the expressed opinion of the Congress to the contrary.

Mr. WHEELER. The Department felt that a modified proposal for reducing the number of area offices should again be suggested to the Congress in the amount of $600,000 instead of the decrease of $1,077,000 proposed in the 1955 budget. That was based on the premise that an area conservationist on the average can properly supervise about 10 work units instead of the present average of about 8.3 work units.

I would like to emphasize, Mr. Andersen, that we are very keenly mindful of the expressions of the Congress and of this committee in the reports. For example, the Department seriously considered, I might say, but did not repeat the suggestion of last year to charge for the maps.

Mr. ANDERSEN. If you will excuse me, I note that fact. But I also note that you are in some way attempting to save $500,000 in the same line of work. Will that be at the expense of the farmers eventually?

Mr. WHEELER. We do not believe so, Mr. Andersen. I am sure Mr. Williams can elaborate on that.

Mr. ANDERSEN. Just where are you going to save $500,000 in this mapping project, nationwide? It simply means one of two things. You have got to take off personnel or you must slow up the whole mapping proposition, do you not?

Mr. WHEELER. We do not believe so. The results of this survey that has been going on for a good many months now indicate that savings can be accomplished by two types of adjustments: One, reductions in drafting and reproduction costs resulting from standardization and simplification of forms, farm plan folders, maps, charts, and other reproduced materials, and reduction in number of forms and other cartographic materials; secondly, by the transfer of certain work to the field units which can be done effectively by them at times when field work is not feasible or to other cartographic units equipped to handle a larger workload.

It is felt that those savings can be effected, Mr. Andersen, without jeopardizing the cartographic service to the farmers.

Mr. ANDERSEN. Undoubtedly, and knowing a little bit of engineering as I do from personal experience, you must anticipate that the greater part of that $500,000 will be in the transfer of the work to the field offices during slack times because, certainly, you cannot make any considerable savings unless you have a radical departure

from the manner in which this has been done through the years, such as by advanced methods in mapping.

Mr. WHEELER. Actually, it is estimated that only about $100,000 of the savings will be attributed to the transfer of work to the field units.

Mr. ANDERSEN. You anticipate you can save $400,000 from the other?

Will you go further into the question I asked you at this time? On what basis did the Department determine to reduce this item below last year's level? What was the line of reasoning?

Mr. WHEELER. From the standpoint of comparing this with the other items, I can only repeat what we have indicated before. We had a problem of working out as best we could, by exercising our best judgment, the relative merits of all of the proposed appropriations for the Department of Agriculture within a limited total figure. Working from a base of zero instead of the amount appropriated for 1955, an effort was made to determine those items which were deemed to be the most important. These are questions of judgment, and questions of policy that are applied to the estimates. These estimates are recommendations of the executive branch and, of course, the Congress may take such action on these recommendations as it believes advisable.

Mr. ANDERSEN. It seems to me, Mr. Wheeler, that not too long ago I heard the Secretary in this room bring out the fact that the Department is very proud of the advances in soil conservation, especially in relation to what is being done on watershed protection.

Mr. WHEELER. Yes, that is true.

Mr. ANDERSEN. Mr. Benson further recalled a visit of the President to the Department of Agriculture wherein the President expressed his great interest in watershed protection. That degree of interest, as exemplified there by the President, would seem to justify holding Soil Conservation Service appropriations at least on an even basis with extension and experiment stations, much as I think of both lines of endeavor. I still cannot see the line of reasoning which proposes to reduce one of the top action programs that we have in the Department of Agriculture, namely, the Soil Conservation Service.

Mr. WHEELER. Mr. Andersen, I would like to point out again that as part of our job of working out the total budget, that was sent to the Budget Bureau, we did provide an increase of $3,790,000 for the watershed protection program which is a part of this Service. This amount was allowed in full.

Mr. ANDERSEN. I am referring now to the Soil Conservation Service operations.

Mr. WHEELER. Yes, sir.

Mr. ANDERSEN. Do you agree with me there that a reduction is proposed?

Mr. WHEELER. Oh, yes.

Mr. ANDERSEN. Why did the Department and the Budget deem it necessary to reduce the level of the work of Soil Conservation Service to the point where you cannot even provide technicians for the new districts coming into being?

Mr. PETERSON. There will be technicians provided for the new district.

Mr. ANDERSEN. Now, Mr. Peterson, how are you going to provide those new technicians? You are going to have to take, just as you

state, and as Mr. Wheeler has stated relative to area offices, men from other districts and other area offices. You are going to have to slice the bread all the thinner. From my personal observation, we are not in a position where we have too much technical help through my area today. We have a good many projects, gentlemen, that I think are suffering because of the fact that the Soil Conservation Service does not have the necessary technicians available in the field that they should have. I want to call to your attention one other thing that comes to my mind.

Down in the drought areas in the Southwest, I believe Soil Conservation Service has put a lot of manpower in there, have they not? What has been done toward giving back to them any recompense for so doing?

Mr. PETERSON. I cannot answer conclusively. Maybe Mr. Williams can.

Mr. ANDERSEN. Have you not furnished technicians, Mr. Williams, for that purpose, and at the same time perhaps thinned out, you might say, the technical personnel available for the regular work of soil conservation in that area? Is that not a fact?

Mr. WILLIAMS. In the wind erosion area, Mr. Andersen, we have stepped up somewhat the amount of assistance, particularly on our soil survey activities. Then the other source helping out in the drought areas has been in connection with some of the emergency water developments, both under ACP, where we have helped with technical assistance, and some in cooperation with the Farmers Home Administration.

Mr. ANDERSEN. I am not criticizing you people at all for turning over that personnel for the purpose of helping out in that disaster but at the same time I do think, and I believe I am correct in assuming, that the regular work of the SCS has been impeded somewhat in that area because of so doing, has it not?

Mr. WILLIAMS. To the extent that we have had to help out with farmers who were not already soil conservation district cooperators and going ahead with their conservation problems on their farms, perhaps there has been some pulling away from the goals of those soil conservation districts in order to take care of some of this emergency work.

SOIL SURVEY ACTIVITIES

Mr. ANDERSEN. While you are testifying, Mr. Williams, I want to ask you about this item of soil survey. Since soil survey work comes under this particular item, I would like to know if you are meeting your soil survey needs.

Mr. WILLIAMS. The general picture on that, Mr. Andersen, is that we expect to map in 1956 about 38 million acres. We have projected as nearly as we can estimate. There will be about 46 million acres in the farms of new district cooperators.

Now, of that total 46 million acres, we feel there will be between 5 and 6 million acres of rangeland for which we can take care of the soils work through our range technicians; and we feel we may be able to count on enough backlog of said survey work to nearly meet that gap in 1956. But during the past 3 or 4 years, there has been a greater rate of increase of land in farms of soil conservation district cooperators requesting assistance than we have been able to make in our soil survey.

Mr. ANDERSEN. That is the point I want to bring out. We are going backward, are we not, in this particular line of work?

Mr. WILLIAMS. We are not keeping up our rate of soil survey with the rate of increase in new district cooperators.

Mr. ANDERSEN. Do the State experiment stations support the survey work in keeping with their interest in it, Mr. Williams?

Mr. WILLIAMS. Soil survey work is cooperative with the State experiment stations. Some of the States are taking an active part and are participating, I think, in a reasonable way. Certain other States are not participating fully. At the present time, our soil survey effort is costing the Soil Conservation Service about $5 million a year and the State experiment stations are putting up the equivalent of about $800,000 a year. However, this has never been on a fund-matching basis so it is not possible to give an exact figure on just what is their proportionate share.

Mr. ANDERSEN. Nevertheless, they do have considerable interest in the work.

Mr. WILLIAMS. They do have a large interest in it. The results are very important to their work. Dr. Kellogg might like to comment further on that.

Mr. ANDERSEN. All right, Doctor.

Dr. KELLOGG. In respect to your first question about soil maps, I should like to point out that we have two pressing needs for them in the Soil Conservation Service. Mr. Williams spoke about the need of soil maps for immediate farm and watershed planning. We start all our work from a soil map. As he pointed out, we are even running slightly behind. Secondly, since the organization of all the soil survey in the Soil Conservation Service, we are also obligated to meet the needs of all agencies and the general public for published soil surveys. We are not meeting this need. We must give full attention to both needs—for copies of field soil surveys for planning and for published soil surveys needed by many users.

EFFECT OF BUDGET REDUCTION FOR CARTOGRAPHY

Mr. ANDERSEN. Doctor, in that connection, what will the proposed reduction in cartography do to your map work?

Dr. KELLOGG. We hope to continue to have copies of field soil surveys, which are essential for giving technical assistance to farmers, even with the proposed reduction in cartographic services. We feel that we must find ways to maintain at least our present rate of soil survey publication. This amounts to about 20 counties or districts annually, which is less than the rate at which they are being produced through our cooperation with the State experiment stations.

Mr. ANDERSEN. Have you further comment?

Dr. KELLOGG. On the State experiment station cooperation I think the figure is about $800,000. We have no recent exact figures, but I believe that there was no change last year.

Mr. ANDERSEN. That is compared with the $5 million total; is it not?

Dr. KELLOGG. Yes, sir. Five million in the Service. I had hoped their contributions would increase. But I do not believe that the figure has changed significantly over that for the last 4 or 5 years.

EFFECTS OF REASSIGNMENT OF PERSONNEL TO WATERSHED PROTECTION

Mr. ANDERSEN. Mr. Williams, this brings me to one basic question that I would like to ask of you, please. Does the reduction from reassigning personnel to other programs mean that the watershed protection work is to be built up by cutting down on assistance to districts in their usual line of work? As you know, I am very much interested in the watershed protection program. On the other hand, I certainly would not want to see that program advanced to the detriment of the regular soil conservation work.

Mr. WILLIAMS. I would feel, Mr. Andersen, that if there is a cutting back on the assistance to districts in conservation operations, that it would be only a temporary situation in which there would be any adverse effect as compared with the watershed activity. We think that some transfer of trained technicians from our assistance to districts, such as engineers and soil scientists, will be essential to pushing that watershed work along. And so the present budget involves shifting some people, some of our trained people, from assistance to districts to the watershed activity. I think it will accomplish the purpose of providing trained people and helping to get the watershed activity underway.

Mr. ANDERSEN. When you say transfer, if I may interject, does that also mean that the watershed protection program is paying for that particular personnel?

Mr. WILLIAMS. That would be correct. In other words, we would use the same people but transfer them to a different activity. It might or might not be at a different headquarters.

Mr. ANDERSEN. It would come out of the other appropriation, however?

Mr. WILLIAMS. That is right; yes.

Mr. ANDERSEN. In other words, you do not feel that watershed protection program would be doing any injury to the regular basic work; is that it?

Mr. WILLIAMS. I am not sure that it would injure it. It all depends on how quickly the adjustments could be made. As I pointed out in my general statement here the other day, it is our feeling that the watershed activity should not be built up at the expense of the other national programs, but should be a supplement.

Mr. ANDERSEN. I stated that as my premise in asking you this question; so I certainly agree 100 percent with you. I do not want to see the watershed protection program developed as a result of injury, for example, to the 11 authorized watersheds that we had before us for years. I think each of these should be justified in its own sphere. I refer to the regular soil conservation work, the 11 authorized watersheds, and the watershed protection work commenced under the act of last year, and also commenced under the Andersen-Hope program. I sincerely hope that we are not cutting the rind so thin that in desperation due to the pressure which is, I know, on today in these watersheds all over the Nation, that soil conservation work itself in the districts will suffer. That is the result that I certainly would not want to see happen as one of the men who has been advancing this watershed protection program in the Congress.

FEASIBILITY OF REDUCING PERSONNEL WHILE OPENING NEW DISTRICT OFFICES

Now, will you go back again and justify to us, if you can, just how can we afford to reduce personnel in the Soil Conservation Service and at the same time expect to do anything worthwhile for these new districts which are coming into being. You know as well as I do, and I point this to Mr. Peterson personally, there is no use encouraging new districts to come into being unless the Government is ready and willing to step in and at least in a year or two's time help with the necessary technicians.

Mr. PETERSON. I cannot disagree with that, Mr. Andersen.

Mr. ANDERSEN. It is destructive of morale.

Mr. PETERSON. I cannot disagree with your premise there, sir.

Mr. ANDERSEN. Along the same line of reasoning, I do not like to help bring into being in my area, as I have during the past few years, new districts and then expect them to get their technical assistance at the expense of the neighboring counties.

Mr. PETERSON. I think it would be appropriate to point out in that connection, Mr. Andersen, that taking the older districts where the demand for service will fluctuate from time to time, the workload level in any district will not remain constant. In the new districts it will be building and in some districts it will be decreasing. That will vary.

Mr. ANDERSEN. I agree with you up to a certain point but not to the point where it will have much effect on helping the general situation. The only way I know, and I am speaking from the viewpoint of the man who has earned his living for 5 or 6 years as a civil engineer, the only way I know to get an engineering job done is to put sufficient men in there to do it. It takes a certain amount of time to do survey work. You have much detail planning work you have to do. Mr. Chairman, I will finish by stating that I disagree most heartily with the proposed reduction in soil conservation operations in this budget.

COMPLETION OF WORK IN DISTRICTS

Mr. WHITTEN. If you will yield to me, I would like to point out that Mr. Petersen's answer, in my judgment at least, is entirely the basis for the Soil Conservation Service. Through the years, the basis for the Soil Conservation Service is the organization of districts, and then planning with the farmers in those districts leading to the completion of those projects. The testimony through the years has been that progress was much slower than it should be and it would take many years at the present rate of progress to ever carry out the planning completely. So the record through the years prior to your coming here shows, first, that we have been altogether too slow in getting farm plans completed; and that, after we got the farms planned, we have been much slower in getting the work itself carried out than those who support this program have wished.

Since we have a definite objective of getting the job done, and since the whole job lacks a lot of being completed in any of the old districts, I cannot see that your statement about reducing the number of men can have any effect except to further retard the job of eventually getting this thing complete.

Mr. PETERSON. Of course, there is a difference in the individual districts with respect to the progress which they have made or have not made.

Mr. WHITTEN. Are there any that have been completed?

Mr. PETERSON. I would assume not, Mr. Whitten, because the job of planning in the Soil Conservation Service goes on constantly, year after year.

Mr. ANDERSEN. I believe we did have evidence here last year to the effect there was one soil conservation district in Georgia that was nearing the point of completion. I am not positive.

Mr. WILLIAMS. Mr. Chairman, I recall that question came up at our hearings last year and it was suggested we make some further study of that matter and we have included in the budget notes this year at page 222 a statement which is the summary of our findings on the progress. Essentially, it confirms your statement, Mr. Whitten, that there are very few, if any, soil conservation districts at the present time which can say that the work is all done. But there will be many districts in which the rate of progress is such that personnel could be shifted into more active districts. As a matter of fact, historically, the Soil Conservation Service has been shifting personnel from districts where the work has slowed down, whether it is a matter of farmer incentive for progress, or for whatever reason, we were not getting as many results in one place as we could in another.

Mr. WHITTEN. Mr. Peterson, apparently your answer would indicate that the soil conservation technicians are there on a year in and year-out basis to more or less help as the situation requires. It is my understanding that the original act intended that we complete a given job. And at no place have we completed it. Therefore, I question whether we should slow down something that is already far behind the rate of progress that we desire. I do believe that your answer indicates that we are sliding back. This is just a matter of opinion.

Mr. PETERSON. I do think, Mr. Chairman, that it would be safe to say that nowhere is the total conservation job completed. My personal opinion is that it never will be completed.

Mr. ANDERSEN. I think you are correct.

Mr. WHITTEN. Pardon me for interrupting, but I differentiate between the soil conservation job and the responsibility of the Soil Conservation Service. We have hoped through the years that the job in the districts of the Soil Conservation Service could eventually be completed.

Mr. PETERSON. I would question that it could ever finally be completed, Mr. Chairman. As I understand the operations within the district, the Soil Conservation Service makes its technical facilities available to district cooperators; that is, landowners who sign up an agreement with the soil-conservation district. My point is, that the level of demand within the districts is changing from time to time. You have an acceleration of demand and a deceleration of demand. As those demands shift, then you shift personnel, depending upon what the workload is and, as I understand it, from the notes I have here from the Service, and as I think Mr. Williams pointed out, the area conservationists can serve an average of 10 work units. They now serve as an average of 8.3 which would indicate that there is some room for moving your technical people within the districts on the workload.

Mr. ANDERSEN. That is a matter of opinion and I do not agree with that opinion.

Mr. WHITTEN. I do not know whether Mr. Williams was told, either by the Department or by the Bureau of the Budget, that this is all the money you are going to get, and you will just have to get by as best you can.

I repeat again that you are dealing with a service which was set up originally, according to justifications to this committee through the years, with a definite objective to get farm plans in each area, and to see that the work called for under those plans was promoted. Now, if that is the program of the Soil Conservation Service as I have known it, then to say that, where a district has slowed down and it is not making progress, we do not have to have as much supervision, is going directly opposite to that objective.

There have been no changes in the law but apparently there is a change in direction. I want to repeat the other things in this budget which would indicate that the Department is changing its outlook and is now approaching it from the standpoint that where the farmers don't want to do it we will give them less people to do it with. This has been a promotional service with an objective. As I say, the rate of progress has not been as great as we would like. But, to reduce the people promoting it just makes the situation worse rather than better.

Mr. PETERSON. I don't think there is any—let me put it this way. I have no personal disposition to diminish the effectiveness of the Soil Conservation Service and the service that it takes to the farmers. On the other hand, I do believe that you cannot and should not force the farmer to take the advantages of the Soil Conservation Service until he himself asks for it through his district and is ready for it. My point is that the farmers' demands fluctuate from time to time within districts.

Mr. WHITTEN. Of course, there is no way under the law to force it on anyone. Nobody is talking about that. But if the Federal Government is going to pay an employee to get a specific job done, I think that that employee is not worth his salt, unless he does try to create a recognition of the need and help the farmer, insofar as he can, to take advantage of the service.

Mr. WILLIAMS. Might I say, Mr. Whitten, that there has been no change within the Soil Conservation Service of objectives of that sort.

AGRICULTURAL CONSERVATION PROGRAM 5 PERCENT TRANSFER PROVISION

Mr. ANDERSEN. Thank you, Mr. Chairman, for your comments.

I have another general question. Mr. Williams, why was the reference to SCS in the 5 percent transfer provision in ACP deleted this year? I want to quote from a newsletter by the National Association of Soil Conservation Districts dated January 25, 1955; and if this information is not correct, I would like Mr. Pope, our executive clerk, to correct me. I quote:

Following is the ACP 5 percent language as it appears in the budget estimates for 1956: "and for the 1956 program an amount not to exceed 5 per centum of the amount of funds available for payments under the 1956 program for the State shall be available for *transfer to any Federal, State, or local public agency for services of technicians* in formulating and carrying out the agricultural conserva-

tion program, but such use of these funds may be made only on the recommendation of the county committee and approval of the State Committee."

The above language is to replace the following wording taken from the 1955 Appropriation Act, used continuously for several years: "that not to exceed 5 per centum of the allocation for the 1955 agricultural conservation program for any county may, on the recommendation of such county committee and approval of the State committee, be withheld and *allotted to the Soil Conservation Service for services of its technicians* in formulating and carrying out the agricultural conservation program in the participating counties, and the funds so allotted may be placed in a single account for each State, and shall not be utilized by the Soil Conservation Service for any purpose other than technical and other assistance in such counties."

Will you answer my question, please, Mr. Wheeler?

Mr. WHEELER. What you have read is a correct description of the proposed change in language in the agricultural conservation program appropriation relating to the so-called 5-percent provision. The purpose of this proposal is an effort to improve it by making it possible for not only the Soil Conservation Service but other agencies who can render a service to ACP to be able to do so. It would make it possible to draw not only upon the Soil Conservation Service but other agencies in obtaining the services of technicians. For example, services with respect to forestry practices might be obtained from State foresters. Such services might, in appropriate cases, also be obtained from local public agencies. The changes would have no effect on the Department's continuing policy which prohibits the agricultural stabilization and conservation committees from employing technicians of their own to perform the technical work.

It is not intended that the proposed change will alter the situation by which the county committee would recommend the use of their funds for getting the technical services they need from the Soil Conservation Service but it would permit them to obtain technical services from other local agencies who might be in a position to render the services they need.

The other feature of the change is that the 5 percent limitation would apply to the funds allotted to each State instead of to each county. This would provide flexibility for the use of these funds in getting technical assistance because if some county did not need to use 5 percent, and another county might need to use more than 5 percent, the percentage would apply against the total State allotment rather than to each individual county allotment.

Mr. ANDERSEN. Thank you, Mr. Wheeler. May I ask that you enlarge, if you wish, upon your answer to my question in the record because undoubtedly this will be a bone of contention when we reach it in the markup.

Mr. WHEELER. This was the first indication I had that this might be controversial. Perhaps it has been misinterpreted to indicate a trend away from using the Soil Conservation Service technicians. I think it is an expansion of the authority rather than a substitution.

Mr. ANDERSEN. I want to give you every possible opportunity to place the best possible answer you can in the record at this point.

Mr. MARSHALL. If you will yield to me at that point, Mr. Wheeler, I wonder if you as budget officer could put in a statement in connection with the question that was just asked you as to the necessity of continuing a 5 percent transfer?

Mr. WHEELER. I could.

Mr. MARSHALL. Maybe it has served its purpose.

Mr. ANDERSEN. Will you do that?

Mr. WHEELER. I will be glad to. This provision was initiated by the Congress and we feel it served a very good purpose in eliminating duplication at the local level.

Mr. ANDERSEN. Use your own time in answering it.

(The information requested is as follows:)

PROVISION FOR 5 PERCENT TRANSFERS OF FUND FOR TECHNICAL SERVICES

In authorizing the ACP for 1950, the Congress provided that county committees, with approval of the State committee could allot, not to exceed 5 percent of the county allocation, to the SCS for services of its technicians in formulating and carrying out the ACP in that county. A similar provision has been included in each annual appropriation act since that time. The funds transferred to SCS under this provision are used to meet part of the expenses incurred in discharging SCS responsibilities for formulation and administration of the ACP at the county level. It permits county committees to utilize the specialized services and skills of SCS, avoids the need for the county committees to hire employees with similar skills and hence to duplicate forces, and facilitates coordination of the Department's conservation programs. For these reasons, we believe that provision for such transfers should be continued, and, in fact, expanded to include other agencies, as proposed in the budget.

The change in language regarding these transfers is proposed for the following reasons:

(1) By moving the position of this provision in the appropriation language, the authorization for technical services would be more clearly associated with the administrative expense item. This is desirable since the cost of technical services authorized by this provision is an expense of operating the program.

(2) The proposed change would make it possible to draw not only upon the SCS but also other agencies in obtaining the services of technicians. For example, services with respect to forestry practices might be obtained from State foresters. Technical services might in appropriate cases also be obtained from local agencies, such as drainage or irrigation districts, county engineers, etc. The change would have no effect on the Department's continuing policy which prohibits ASC committees from employing technicians of their own to perform technical work. Further, it does not change the assignment of responsibility which SCS now has for technical phases of the program. Nor is the change intended to reduce the amount of funds which would otherwise be transferred to SCS.

(3) The proposed language would change the limitation on the amounts of funds which could be used for technical services from 5 percent of the county allocation to 5 percent of the funds available for payments in the State. This would provide needed flexibility within a State to permit use of the available funds more nearly where needed within the State.

CONSERVATION CREDIT ON INCOME TAX

Mr. ANDERSEN. Mr. Williams, what effect do you think the action of the last Congress on conservation loans and conservation income-tax allowances will have on conservation progress and the SCS workload in the future?

Mr. WILLIAMS. Mr. Andersen, I feel that this conservation-credit provision, which is administered by the Farmers' Home Administration, will have a very healthy effect over the years in helping farmers to find ways of going ahead with their conservation practices ahead of the time that they might otherwise be able to do. We have observed over the years that many farmers have reached the point of knowing what to do; they have their plans but they do not have the ready cash to go ahead and carry out the work, even though they know that over a period of 5 years, it would pay them to do so.

So that getting conservation credit should be a great help in pushing the conservation work along.

It is pretty difficult, I think, to make any particular estimates of just what effect the water facilities and conservation credit is going to have on our workload. Based on experience to date in servicing loans made by the Farmers' Home Administration under authority of Public Law 597 in this fiscal year and estimated for 1956, it is believed that the SCS will need to provide about 225 man-years of service at a cost of something in excess of $1 million. Of course, the Service has been providing some of this assistance heretofore. In addition, a part of this service would be furnished cooperators in any event as a part of the normal activities of the Service. It is anticipated that the effect of the conservation provisions in the income-tax law may also stimulate additional activity that would require a relatively small amount of additional assistance that would otherwise not have been provided to cooperators.

This year in the drought States, emergency drought States, there are a good many applications, particularly in States like Louisiana, Arkansas, Kansas, and several of the southern States. Special demands for assistance for supplemental irrigation and for farm water supplies have been urgent in many areas. Many of these requests were to assist the FHA borrowers or the folks who had insured loans from banks backed up by the FHA to lay out their work so they could go ahead with it.

REPORT ON RESEARCH NEEDS

Mr. ANDERSEN. Thank you, Mr. Williams.

One final question, please. I believe in the original remarks before the subcommittee that you mentioned something about a research needs report. Did you not?

Mr. WILLIAMS. Yes; I did.

Mr. ANDERSEN. Could you place in the record at this point that report that you referred to, please?

You need not discuss it now. I simply want it in the record.

Mr. WILLIAMS. We will be glad to supply that for the record.

Mr. MARSHALL. Without objection it will be placed in the record.

(The report referred to is as follows:)

UNITED STATES DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE,
Washington 25, D. C., October 15, 1954.

To: State and Territorial conservationists.
From: D. A. Williams, Administrator, SCS.
Subject: SCS 1954 Research Needs Report.

Transmitted herewith is the SCS 1954 Research Needs Report, including:

(1) Memorandum from Administrator of Soil Conservation Service to Administrator of Agricultural Research Service, dated October 12, 1954.

(2) Memorandum from Chairman, SCS National Research Needs Committee to Administrator of Soil Conservation Service, dated September 30, 1954.

(3) Outline of research needs.

This document represents a great deal of effort from numerous persons both within and outside of the Service. Each State conservationist should see that a copy is placed in the hands of the director of the State agricultural experiment station, director of the State agricultural extension service, and the chairman of the Research Needs Committee of the State Association of Soil Conservation Districts.

D. A. WILLIAMS.

UNITED STATES DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE,
Washington 25, D. C., October 12, 1954.

To: Byron T. Shaw, Administrator, ARS.
From: D. A. Williams, Administrator, SCS.
Subject: Transmittal of SCS National Research Needs Report.

In accordance with the arrangements made when soil and water conservation research was transferred from SCS to ARS, I am submitting herewith our first national report on research needs. With the national report, which includes an informative memorandum of transmittal to me from the SCS National Research Needs Committee, I submit for your additional information the State reports and consolidations by groups of States from which the national report was prepared. These supplementary materials provide details regarding the nature and location of problems and should be of considerable interest to persons responsible for planning and orienting specific phases of the research program.

The report I am submitting is the result of a systematic process involving the analysis and listing of problems by all technical personnel of the Service—work unit consevationists, who work directly with soil-conservation-district cooperators on the land; area conservationists, who supervise the work units; the plant technology and engineering staff specialists who help maintain and improve the technical quality of the program; and the engineers who are working on watershed protection problems.

Representatives of soil-conservation districts, State conservation boards and commissions, and other groups were invited to advise regarding the importance of problems which are not being met as rapidly or effectively as they believe necessary.

State experiment stations, Extension Services, and other agencies were asked to help identify, appraise, and list problems requiring research. The procedures for this cooperative endeavor were not prescribed nationally but were left to the discretion of the interested agencies in the individual States. However, for this purpose, the SCS as a matter of policy has encouraged the utilization of a committee, formal or informal, to screen suggested research needs in each State.

Furthermore, each State conservationist has been instructed to discuss the report of his State with the director of the State experiment station regarding the extent to which the listed research needs can be met with State resources. Our purpose is to provide the Agricultural Research Service with information as well adapted as possible to the task of planning the Nation's cooperative research program in the field of soil and water conservation. We believe the process has worked very well even though new and not fully developed.

In future reports we hope to provide more specific, detailed information than we have given in our initial report with respect to problems and studies related to those problems in definite geographical areas. On the other hand, this first report has the special virtue of being a fresh and comprehensive compilation.

The national committee of the Service indicated the relative urgency of listed problems as seen from a technical standpoint. It did not attempt to judge which of the urgent problems are most important from an administrative point of view.

Having considered the report in relation to the Service program as a whole and as it is now developing, I wish to indicate five top priority groups of problems. They are as follows:

1. *Hydrologic problems.*—The Congress has provided for a great new program of watershed protection. The Nation's interest in irrigation and drainage continues to grow. As a result, the Service has increased responsibilities involving not only heavy expenditures by the Government and private citizens but also the future safety and economic development of the country. Through our expanding program, we want to apply the best solutions to problems that science and technology can provide.

2. *Economic aspects of soil and water conservation.*—One of the major obstacles to private initiative in applying the principles of soil and water conservation is the lack of definite information regarding costs and returns of conservation farming practices and systems. It is especially important in a period such as the present when farm production adjustments are needed for economic reasons to find ways of meeting both economic and conservation objectives at the same time.

3. *Basic soil problems.*—The extremely complex nature of soil and the vast number of soils make the program of soil and water conservation very complicated. I need not tell you that the fastest and cheapest way to meet the problems of management listed by farmers and technicians is to discover the basic laws or principles of nature. Principles, once discovered, can be applied generally.

4. *Obstacles to range improvement.*—Research that will help overcome these obstacles is one of the prime needs of the conservation program. Range and other permanent pasture occupy more than half of all the land in the United States. Much of our grazing land is becoming less and less productive. Much of our cropland, especially in dryland farming areas, should be shifted permanently to grass. Field experience indicates that we do not yet have adequate standards for judging the long-term potentialities of range sites, as necessary for good management, and that better methods of establishing and reseeding ranges are badly needed.

5. *Problems related to irrigation.*—The Nation is beginning to learn that irrigation not only can be of great benefit, but that the contrary is also true. It can ruin soil and waste precious water resources. The opportunities for both good and ill come closer to realization with the rapid increase now taking place in irrigation farming. For conservation as well as for purely economic reasons, we need to improve our use of irrigation water.

Although the Service has prepared this report very carefully, we recognize the likelihood that those who use it will have questions on which they want further information. We stand ready to assist in any way possible as the research needs of the soil and water conservation program are considered by the Agricultural Research Service, the advisory committees, department policy officials, the congressional committees, or any others who have a part in determining the course of the research program.

Meanwhile we are making plans for the next report to you on our research needs. We hope to improve upon our reporting procedure by scheduling the various steps more definitely and at earlier dates in work plans throughout the Service. One result will be to advance the date for presentation of the report to you from October, as it is this year, to July 1 next year and in succeeding years.

We will appreciate any suggestions you care to offer for improvement of the report.

I trust you will have no objection to our use of this report and the supplementary material as reference documents, as we in the Service and the others who help in the preparation of recommendations work toward preparation of the next report.

In view of the thorough consideration that this inventory of research needs has already had, and in accordance with our understanding that ARS considers such an inventory essential in meeting its repsonsibilities, I am sure that the report will receive careful study as an aid in gearing existing research projects to field problems as well as in planning new research where necessary.

D. A. WILLIAMS.

UNITED STATES DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE,
Washington 25, D. C., September 30, 1954.

To: D. A. Williams, Administrator.
From: National Research Needs Committee, A. D. Stoesz, chairman.
Subject: National research needs report for 1954.

The report represents a sincere effort on the part of the committee to list and briefly describe the problems of the soil and water conservation program which are most significant from a national standpoint and which apparently cannot be fully solved with information now available.

The national report is not a substitute for the State reports. These and the consolidated reports of groups of States supply useful details and descriptions of field conditions which could not be included in a national report of usable proportions.

The committee has tried to avoid listing as research needs any problems or aspects of problems which might be met adequately within the Service by means of field trials or improvement of practices and procedures. On the other hand, the committee has not hesitated to recommend additional research on problems that are being met provided it found evidence that further scientific study might lead to improvements or speedier application of the conservation measures now being used.

This is based upon the belief that all parts of the program, including the most successful measures, are subject to constant review and improvement.

The research needs are grouped for the sake of convenience under subject matter headings. It is recognized that other headings could have been used and that various problems might have been classified differently. The committee does not argue for its own method of arranging the material and has not

attempted to rate one heading above another in importance. Rather, the committee wishes to call attention to the problems themselves. An attempt has been made to indicate urgency of need by assigning priorities of AA and A and by listing some problems without priority designation. Unfortunately, any assignment of priorities tends to down-rate items which carry the lower priority designations or none at all.

Let me point out that the committee attempted to list only urgent needs and that the priority assignments indicate special urgency in the opinion of the group. As the research needs reporting system is perfected through experience it may be possible to separate the more urgent and less urgent needs more precisely.

Although, as already stated, the committee did not rate subject headings, it is only fair to state that problems directly concerned with water were consistently rated as urgent. This is due in part to the expansion of activities in watershed protection and increasing interest over the country in the management of water. It is probably also due in part to the fact that a relatively small part of the Nation's research related to soil and water conservation has dealt directly with water.

SOIL CONSERVATION SERVICE NATIONAL RESEARCH NEEDS REPORT

I. Hydrology

The hydrologic research needs of the Soil Conservation Service are primarily in the fields of: (1) planning of programs and establishment of practices for soil and water conservation, including drainage and irrigation; (2) planning of programs and construction of measures for watershed protection and flood prevention on small watersheds.

A. RUNOFF AND WATER YIELDS

Additional information on runoff and water yield is needed, nationwide, in the interest of efficient operations by field personnel and in the design and installation of structures and measures at the lowest cost consistent with engineering soundness. Watershed investigations currently underway in all States and those contemplated for the future add to the urgency of need for analyzing existing hydrologic data and adding data through research. The most urgent immediate needs are as follows:

(AA) *1. Peak flows and seasonal and annual water yields*

The Service needs information that is applicable to watersheds ranging in size from a few acres up to 400 square miles. This should include an evaluation of the effects of individual soil and water conservation practices and combinations of practices on peak flows and on seasonal and annual water yields. In such an evaluation, consideration should be given the effects of soil characteristics, vegetation, seasonal and annual precipitation, climatic zone, elevation and orientation, and drainage area size.

Information obtainable from the proposed studies would be of great value in the refinement of design criteria for all types of water-control structures. The success of the flood prevention and watershed protection work as well as the farmer-installed engineering measures is dependent upon the use of the most economical types of structures compatible with structure safety and permanence. This objective requires more data than are now available.

The widespread interest in irrigation and dwindling water supplies for both livestock and irrigation use lend emphasis to the need for more information on water yields. Yield information would also be of use to the planners of public water supplies and could contribute to a better understanding of the water problem by the general public.

(A) *2. Rainfall characteristics*

Special attention should be given to storm duration, amount of rainfall in given time periods, areal distribution of rainfall, and seasonal occurrence in different climatic or physiographic regions. The possibility of developing a method of expressing storm frequency in relation to areal distribution should be investigated.

This information would be of great practical value in developing reliable estimates of peak flows and water yields for watersheds where adequate records do not exist.

Other problems requiring attention:

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Ground water supplies.—In many areas where irrigation is dependent upon groundwater, pumping has lowered the water table to an alarming extent.

Analysis of data on groundwater supplies continuously gathered by several agencies is needed to determine long-range trends.

Knowledge of the water supply is essential in planning revisions in both land and water use.

Recharge of aquifers.—Water spreading for the recharge of aquifers is used in several western areas where pump irrigation is practiced.

More information is needed on practical methods of groundwater recharge in other parts of the country. If practicable methods were developed for getting surplus rainwater into the groundwater, supplies available for pump irrigation in dry seasons would be increased.

B. SEDIMENTATION

Damage from erosion is not confined to the soil itself. Additional damages occur when eroded materials are carried into the stream systems and come to rest in channels, on flood plains, on city streets, in storage reservoirs, and elsewhere. Sedimentation involves the processes of entrainment, transportation, and deposition of eroded materials. It is estimated that the damages from sedimentation in this country amount to about $175 million annually. Sedimentation must be considered in the development of watershed programs and in the design of impounding and grade-stabilization structures, channels, and waterways.

The more urgent needs for sedimentation research are:

(AA) *1. Sediment production*

Development of methods for determining the effects of inherent erodibility of soils, the degree and length of slopes, cover and rainfall characteristics on sheet erosion and the amount and character of sediment produced. Similarly, studies are needed to evaluate the causes of channel or gully erosion and movement of sediment to points of damage. This information would make possible analyses of physical characteristics that would point out the sediment source areas in watersheds in accordance with their relative contribution to downstream damages. The necessity for detailed, time-consuming investigations of each area would be eliminated.

Information is also needed about sediment production rates on roads. Cut slopes, fill slopes, shoulders, and ditches along all classes of roads are important sources of sediment. On unpaved roads, much sediment is also washed from road beds. Quantitative measurements of sediment from roads would be useful in watershed planning.

(AA) *2. Sediment delivery rates*

Sediment yield data should be assembled and correlated with conditions of erosion, topography, channelization, size, and other watershed characteristic so as to determine sediment delivery rates. This information is needed for accurate determinations as to how much of the sediment produced above a given point in a watershed actually reaches that point. Such information is essential in establishing sedimentation rates for structure sites.

(A) *3. Sedimentation of reservoirs—rate and distribution*

For accurate determination of the effect of sediment upon a particular structure, it is necessary to know (1) how much of the sediment reaching the structure site passes through the spillway or outlet, (2) where the sediment retained in the reservoir is deposited, and (3) the volume that deposited sediment will assume in a reservoir. This information is necessary in the design of all structures which would be affected by sedimentation.

Scientific investigations should determine the relationship between (a) the amount and character of sediment inflow and the detention characteristics of the structure, and (b) the rate of silting, ultimate compaction, and distribution of sediment in allocated storages.

(A) *4. Sedimentation in relation to channel grade above and below structures*

Studies are needed to determine (1) the relationship between (a) the nature and amount of sediment inflow and (b) the grade of deposition above structures, and (2) the relationship between (a) regulated, desilted outflow, and (b) channel degradation and bank erosion below structures.

Natural stream channels and gullies adjust themselves to flow and sediment-load characteristics. Altering either of these characteristics may have a bene-

ficial or detrimental effect upon channel conditions. More information is needed as a basis for determining the effects to be expected from the installation of structures or other measures for waterflow retardation, water or sediment storage, and channel stabilization. This information is also needed in the design of channels for drainage and irrigation since it is important that such channels neither scour nor silt to a significant degree.

C. HYDRAULICS

Water control structures play an increasingly important role in the soil and water conservation program. The use of such structures has increased rapidly over the past few years, due principally to (1) flood prevention operations in authorized watersheds and pilot plant projects; (2) new legislation on small watershed protection; (3) spread of irrigation to the humid areas; (4) increased interest on the part of farmers and ranchers in controlling damaging gullies and in providing adequate water for livestock; and (5) knowledge that improvements can be made in existing standards for terraces, diversions, waterways and other water management structures.

Where adequate hydraulic information is lacking, there exists the danger of overdesign, which increases the cost unjustifiably, or underdesign, which may result in failure.

Studies are needed to determine the most economical type of outlet structure consistent with engineering soundness for waterflow retardation, farm ponds, erosion control dams, irrigation reservoirs and sediment traps. There is a wide need for such structures, and many of them must be installed by farmers and ranchers. All items of cost not required for safe functioning of the structure must be omitted in the interest of making the best use of the landowners' resources. The same need exists for structures financed by Federal funds.

Current needs for hydraulic research information are as follows:

(AA) *1. Inlets of erosion control structures*

The Service needs the results of further studies of inlets of both monolithic and pipe drop inlets, especially the latter. The crest, riser, and transition are geometrically, structurally and hydraulically related. The objective would be to find combinations of these elements which would (1) produce flow throughout the barrel, (2) result in a smooth, positive, reversible transition from weir flow at the crest to pressure flow, (3) limit hydraulic losses, (4) limit pressures throughout the system to permissible levels, (5) offer no construction difficulties, and (6) permit construction at low cost.

Testing of trash guards should be done on as large scale as possible to determine proper relationship, between the maximum size of debris that will pass through the guard, the size and shape of the openings in the guard, permissible velocities through the guard and other factors.

Better antivortex devices are also needed.

(A) *2. Cantilever outlet*

The purpose of this study is to determine the proportions which will reduce ultimate scour to a minimum.

(A) *3. Development of design criteria for transition from circular barrel to SAF stilling basin*

Data are needed for the transition from a square, rectangular, or circular barrel to a chute.

(A) *4. Streambank-erosion control*

Information is needed to determine the most economical methods of controlling the causes of streambank erosion.

Landowners are requesting the assistance of Soil Conservation Service technicians in protecting their lands from eroding streams. In each case a determination must be made as to whether control of erosion is possible within the resources available to the landowner or group of landowners involved.

Some information is also needed in connection with the planning and installation of streambank-erosion control structures and measures under the flood-prevention and watershed-protection programs.

Other hydraulics problems needing investigation include:

Farm ponds.—Development of the most economical types of trickle tubes and antiseep collars for small farm ponds is needed to insure lasting and economical construction of farm ponds as well as full and effective use.

Chute outlet.—A model study of "flip bucket" chute outlet should be made to establish the design criteria and limitations on use of this type outlet. It is more economical than the SAF stilling basin and may have wider application than current use indicates.

Ditch-flow measure.—Over the past few years there has been a great increase in the use of concrete lined ditches constructed with "slip" forms. Conventional flow measuring devices are not fully suited to this type of ditch, and a better device should be developed.

II. Basic Soils Problems

Investigation of the following basic soil problems is considered to be a high priority need because knowledge gained from such research would (1) have wide application in the solution of soil and water conservation problems; (2) provide a basis for developing more reliable standards for many of the soil and water conservation practices, (3) facilitate the work of and provide a better scientific base for the soil survey; (4) be useful in planning research programs; and (5) make possible more accurate the interpolation of research information from the major soils to related soils.

While much work has been done in this field, particularly on the various segments of problems, what is needed now is a concerted effort to determine the fundamental principles involved and to develop techniques for measuring soil structure and for measuring the water and its movement in soils.

Two major probelms—(1) Soil structure, and (2) soil-water relations—should be given highest priority in research on behalf of the soil and water conservation program.

(aa) a. soil structure

Many facts are known about good and poor soil structure, but very little of how much it influences crop yields. Basic research is needed to determine the role of soil structure in providing more favorable conditions for plant growth. Effects of soil structure on root development and plant growth, infiltration, and water movement, and related aspects of the problem need careful investigation. Methods should be developed for measuring the effects of various soil-management practices on soil structure. Research along these lines should include both well-drained and poorly drained soils as well as sandy, silty and clay textured soils.

(aa) b. soil-water relations

Basic research on water movement in the major soils is a real need. A paramount consideration is the development of a reliable method for measuring water movement in soils. Then data on water-holding capacity, porosity, infiltration rates under various cover conditions, and other soil characteristics, should be acquired and prepared in form to help guide the design of drainage and irrigation systems, grassed waterways, erosion-control structures, other conservation practices and for use in planning watershed programs.

III. Water Management

a. irrigation

Intensive agricultural crop production has been made possible on some 25 million acres of the 17 Western States through the practice of irrigation. Other arid areas of the West are under development through the use of groundwater and in new reclamation projects. Increasing interest has developed among farmers in the humid sections of the Northeast, Southeast, and Midwestern United States in irrigation to supply supplemental soil moisture during drought periods. The land receiving irrigation in these areas now approximates 1 million acres. The potential development may be several times this area.

Much effective research in irrigation has been carried on by the United States Department of Agriculture and the State agricultural experiment stations in the West. Intensification of this research is needed to furnish more detailed information directly applicable to the following problems:

(AA) *1. Water requirements, or consumptive use, of agricultural crops*

The rates of water use, as well as the total quantity required, by the many agricultural crops in the various climatic zones of the United States needs to be determined in detail.

Root distribution of agricultural crop plants

More complete information is needed on the distribution of the root system by depth zones and through progressive development periods. This information assists in determining where and in what quantity soil-moisture replenishment is required by irrigation.

(AA) 3. Water intake rate of agricultural soils

A knowledge of the water-intake rate of the soil is basic to the selection, design, and establishment of irrigation systems and to the determination of the most efficient and effective irrigation practices. A simple, accurate field method of determining the water-intake rate for each soil texture throughout the effective root zone of agricultural crops is urgently needed.

(A) 4. *Optimum soil-moisture level*

The replenishment of soil moisture withdrawn from the soil by growing crop plants is generally subject to control by the irrigator. What soil-moisture level is best at different stages of crop development for vegetative growth and for seed production?

(A) 5. *Water-holding capacity and soil-moisture availability*

A simple, adequate field method of determining the amount of water a soil will hold and the amount of soil moisture available to plants through a wide range of soil-moisture levels is urgently needed.

(A) 6 *Climatological information*

In the humid regions especially, the detailed analysis of climatological records is needed to assist in a determination of the extent to which irrigation may be advantageously used.

(A) 7. *Effect upon soil structures*

Further basic research is needed to determine the effect of various methods of applying irrigation water to soils—i. e., flooding, sprinkling, etc.—on soil structure, porosity, volume weight and permeability. What modification of irrigation or soil management practices will serve to reduce any deleterious effect that may develop?

(A) 8. *Effect of limiting soil layers*

Textural characteristics of many irrigated soils vary extensively and even abruptly in the root zone of crop plants. Such variations affect water movement into and through the different textural strata and require adjustment of irrigation practices to the many textural combinations. Can further basic research in soil physics develop information on which to base guides for those needed adjustments?

(AA) 9. *Irrigation efficiency*

Irrigation water is limited and costly in many areas. Much water is lost through wasteful and inefficient application practices. More research is needed to evaluate water waste and to develop improved methods of water application.

Other irrigation research needs include:

Improvement in design of water-control structures and canal linings;

A comparative study of irrigation systems with special emphasis on the sprinkler system and the most effective rates and time of application of a limited supply of irrigation water;

Studies on length of runs;

Across-slope irrigation on orchards and cropland;

Water application on cropland, including contour row irrigation;

Long- and short-period rotations with adapted crops to maintain soil fertility and optimum production per unit of water.

B. DRAINAGE

A tremendous amount of money has been spent for drainage on farmlands of the United States. Additional investments are being made each year in new drainage and for the maintenance and rehabilitation of existing facilities. Very little basic research has been carried on to furnish information relative to the feasibility of drainage or to supply the data on which to base accurate specifications for installations costing such a huge sum of money. Even today little is known about the soil and crop management practices necessary to maintain or improve the effectiveness of tile and other drainage systems. Fundamental drain-

age investigations should be one of the first of the present research needs to be met in order to protect the large investment already made and to insure the wise expenditure of funds where new drainage is undertaken.

The problem of drainage is not limited to the humid East. Drainage problems have become increasingly more acute as the valleys and basins of the West have expanded their irrigated acreage. More and more, it has become apparent that when water is applied to the land artificially, drainage problems are created.

Following are the most important drainage research problems needing attention (investigations along these lines should be supplemented by field observations, examinations, and tests to make it possible to extend the research facts learned from basic studies to a wider range of soils, climatic conditions, etc.):

(AA) *1. Fundamental drainage research*

Basic drainage research should be initiated to increase knowledge of relationships between the movement of water in and on the soil and how the behavior of water is affected by (*a*) the depth, grade, and spacing of tile; (*b*) the various drainage practices such as surface ditching, land smoothing, tile drainage, subsoiling alone and in combinations; and (*c*) tillage, crop rotation, and other soil management practices.

(A) *2. Methods of planning and designing drainage systems*

Conservation technicians need simplified methods for making the measurements that must precede the planning of drainage systems. This will likewise involve the development of accurate drainage coefficients for various topography in rainfall zone, and other conditions.

Other drainage problems needing research attention:

Maintenance of drainage ditch banks to prevent bank sloughing; the subsidence of much land; the possibilities of controlled drainage and subsurface irrigation through tile drains; the effects of surface drainage on production and quality of rice; the reclamation of high water table bottoms, swales, and valleys in the West; the rehabilitation of mountain meadows; the control of seepage along leveed rivers; and determination of maximums for working heads for concrete pipelines in (*a*) individual soil types, (*b*) various frost conditions, and (*c*) under various depths of cover.

C. TERRACES

Terracing is one of the oldest and most widely used conservation practices. When properly designed, constructed, and maintained, and when adequately supported by vegetative and fertility practices, terraces can be most effective in conserving moisture and controlling erosion. Problems in connection with terraces include:

(A) *1. Vegetative relations*

Physical and economic information is needed as to effectiveness of residue management and other agronomic practices when used in combination with field terraces on various slopes as compared to agronomic practices alone on various slopes and soils. Data are needed on runoff, moisture infiltration, and soil loss.

(A) *2. Terrace system*

Technicians need to know (1) maximum allowable terrace grades for parallel terrace systems, (2) maximum spacing of terraces that would be effective on permeable soils, (3) cost and effectiveness of terrace systems in relation to differences in spacing and size of terrace, and (4) effect of different terrace systems on crop yields in areas of moderate to low rainfall.

Additional information needed:

Information is needed on snow ridging and terracing or other mechanical means for moisture conservation in high-elevation areas of the West. Data on the effectiveness of this practice on erosion control and crop yields and on the economics of the practice are needed.

D. WATERWAYS

Water management starts even before the raindrops hit the soil and ends when the water not immediately absorbed is conducted safely to a point of storage or stabilized stream channel. It is also concerned with the conduction of water back to the land for irrigation.

The orderly conduction of water down the long slopes of the hilly and mountainous areas, in the light of existing information, often requires expensive structures. Farmers hesitate to make the investment without additional experimental

results on alternatives. This has been a very serious block to the spread of conservation farming. Many waterways are unstable because of the character of the soil (highly assorted sands, silts, and clays) or because of saturated flow or frost action. Specific problems in need of immediate attention are:

(A) *1. Waterway design*

Improved design of waterways is needed for various soils, covers, and slopes. Research on waterways at the Stillwater, Okla., laboratory should be expanded and adapted to a wider range of conditions of soils, climates, and topography.

(A) *2. Establishment of vegetation*

Satisfactory methods of establishing vegetation in waterways under adverse conditions of moisture, temperature, and soils have not been developed for all areas. Investigations of various soil conditioners, asphalt coating, and other means of reducing erosion while vegetation is being established are desirable.

E. STORAGE

Reservoirs and ponds for water storage are of growing importance in every part of the country. Even in humid areas, a succession of dry years has changed the general concept of water conservation. The trend toward total conservation of water for agricultural use is increasing. Water is stored for livestock, for irrigation, and to produce fish. Research problems in connection with water storage include:

(A) *1. Weed and algae control*

Aquatic weeds and algae reduce water-storage capacity; interfere with fishing; plug irrigation inlets, lines, and sprinkler heads; and impair the efficiency of canals.

Effective, practicable measures for the control of aquatic weeds and algae in irrigation reservoirs, farm ponds, and canals are needed in every part of the country.

(AA) *2. Sealing ponds against leakage*

Leakage of ponds and reservoirs is a problem of widespread importance. In many instances good land use is dependent upon holding water in ponds. Where leakage occurs, it must be controlled before a dependable source of livestock water is available. Without a source of water, steep slopes that should be in grass often remain in cultivation.

Research has given help in certain localities, but the methods used are not applicable in most other areas.

3. Sealing water surface to reduce evaporation

Much needed water is lost through evaporation from reservoirs and ponds during continued periods of dry, hot weather.

The possibilities of reducing these evaporation losses through the use of surface sealing agents should be investigated.

Additional problems:

Vegetated spillways.—Spillways on reservoir and pond dams commonly lack adequate protection. Adapted plant species, methods of establishment, and management for maintenance are problems on which more information is needed.

Methods of reducing wave action.—Wave action causes considerable erosion damage to dams. Better control measures, both mechanical and vegetative, are needed.

Protection of dams against rodent damage.—Improved methods of controlling the rodents which weaken dams would be of value in conservation work.

IV. Soil Management

A. CROP ROTATION

Crop rotations which have included either grass, legumes, legume-grass mixtures, or high residue producing crops have been effective in controlling erosion and preventing soil deterioration. Research has shown that dense grass-legume mixtures provided almost complete soil protection while they occupied the land. They also materially reduced soil and water losses during cultivation for succeeding crops. Soil and water losses were further reduced where cover and other crop residues were kept on or near the surface to protect the soil against damage by raindrop splash and wind erosion. Importance of crop rotations in soil and water

conservation is further accentuated by the extensive acreage of land used for cultivated crops. Furthermore, this cultivated land—usually the best on the farm—is suffering more damage by erosion and other types of soil deterioration than any other land on the farm.

(AA) *1. Comprehensive rotation investigations*

Comprehensive investigations of crop rotations are needed for various purposes, including: Determination of the ratio of ground cover to tillage needed in rotations on the various soil groups and classes of cultivated land; comparisons of effectiveness in maintaining structure, tilth and organic-matter content of soils of two general types of crop sequences: (*a*) high residue-producing crops such as high-yielding corn (all residue returned to the soil) with and without winter cover, and (*b*) low residue producing crops, such as vegetable crops, peanuts and cotton in a rotation including legumes and grasses; comparisons of effectiveness of grass-legume mixtures and grass alone, with judicious use of fertilizer, particularly nitrogen, learning relative efficiency of fertilizer, in terms of crop yields, when used in soils of the same type those structure, tilth, and organic matter content vary because of different cropping treatments; determination of relative effects of deep- and shallow-rooted plants on plow pans and other physical characteristics of the soil where lime and fertilizers are applied at varying depths; finding the influence of rotations on such factors as soil structure and tilth, water intake and movement through the soil, water-holding capacity, and organic matter; learning the effects of rotations on insect and disease damage to crops, crop stands, and weed infestation; and economic comparisons, including value of forage and pasturage produced in rotations, effects of rotations on other crop yields, costs of operation, and financial returns.

Further investigation is also needed on the following. Management of soils in the humid area where corn is grown intensively; soil management in dry land areas, the management of coastal plain soils, use of reseeding legumes in cropping systems; the place of irrigated pasture in the irrigated land rotation.

B. CROP RESIDUE MANAGEMENT

(MULCH FARMING)

A basic requirement in the control of erosion by wind or water and in water management is the maintenance of a soil surface that will absorb water at the point it strikes the ground. As much water should be absorbed as the soil can store and still maintain or improve crop or cover production. The balance must be disposed of in an orderly manner with a minimum of erosion.

Research has already developed a system of farming where plant residues are held on or near the surface. It is usually referred to as mulch farming, or stubble mulch farming. Wherever use, it has been very effective in erosion control and water conservation. West of the 25-inch rainfall belt it has generally maintained or increased yields. To the east, yields have been slightly erratic. Solution of this problem in the East would lead to a great advance in conservation farming.

Farmers are not taking to the practice in the degree hoped. In the West a survey indicated the reasons were as follows: Lack of control of cheat grass and other weeds, difficulty of drilling in heavy residues, insects, disease, problems of fertility-moisture relations, dissatisfaction with yields, and lack of satisfactory equipment. In the East the practice has not progressed to the point where it can be generally recommended. Both applied and basic research are needed on this important conservation practice.

(AA) *1. Fundamental research on mulch farming systems*

Investigations are urgently needed on air, water, nutrient, soil structure biological, plant competition, and tillage factors involved in mulch farming.

(A) *2. Applied research on mulch farming*

A continuation of present investigations and initiation of new work where needed on (1) the development of satisfactory methods and equipment for mulch farming, (2) planting crops through residues, (3) control of weeds, (4) insects, (5) diseases and (6) related factors.

Such studies will naturally include placement of residues, requirements for extra nitrogen where large amounts of carbonaceous materials are present, and farming practices devised to handle varying quantities and types of residues.

C. TILLAGE

Developments in the use of farm machinery, fertilizers, insecticides, and herbicides have intensified machine traffic over land. Resulting soil compaction has intensified several tillage problems under both the mulch farming system and conventional farming. Wind and water erosion, removing productive surface soil or covering productive soil with inert material, has brought on other special tillage problems. Problems on which most research is needed include:

1. Soil compaction by tillage implements

Intensive cultivation and machine traffic form compacted layers immediately below the plow layer in many of the better cropland soils. These compacted layers delay drying of the surface soil in spring and limit the root development of summer crops. In dry summers, the yield of crops such as corn, cotton, and soybeans are materially reduced.

A similar condition of compaction occurs as surface "platy" layers of older irrigated soils in the West. The problem is also acute on nonirrigated lands in many areas.

More information is needed about how methods of land preparation, kinds of equipment, and the moisture content of the soil affect formation of these compacted layers. Information is needed on how tillage methods—deep plowing, chiseling, and subsoiling—used alone, in combination with deep-rooted vegetation in cropping systems, and with both shallow and deep application of soil amendments, will affect structure, water intake, water storage, root development, and crop yields.

(A) *2. Deep plowing*

Deep plowing to bring underlying materials to the soil surface is practiced in several parts of the country. On the high plains deep plowing is done primarily as a wind erosion control measure and to increase crop yield.

Research is needed to determine the long-time effects of deep plowing—its influence on the growing of cover crops, on crop yields, and on the mechanical and chemical condition of the soil profile. The cost-benefit ratios of the practice should also be studied.

(A) *3. Subsoiling of problem soils*

Extensive acreages of compact, poorly drained soils have unfavorable, soil-plant-water-air relationships. A comprehensive study of subsoiling is needed on such lands to determine its effect on water intake, water movement through the soil, aeration, root depth and development, and plant growth. Also recommended for attention are the effects of deep fertilizer placement and the question of how often a repetition of subsoiling operation will be needed.

(A) *4. Pasture renovation*

Pastures on many soils are compacted by grazing animals to such an extent that the intake of water and its movement through the soil are greatly reduced. In some cases, increases in grass production bring increases in the traffic of animals on the pasture. Runoff is increased, available water storage for the dry period decreased, and a less favorable plant population encouraged. Machines that aerate and open the soil for water intake are on the market. Their effectiveness needs to be investigated. Perhaps the pasture can be managed in a way to minimize the compactions. Perhaps the compaction problems can be met by harvesting the grass and taking it to the animals. These possibilities should be studied scientifically.

(A) *5. Rough tillage*

Considerable research has been carried on in Arizona on the use of rough tillage. When used prior to a preplanting irrigation, this practice, which makes a very rough and cloddy surface, has had a marked effect on the water intake rate of fine-textured soils. It has also effectively increased the rate of water movement through soils in salt leaching operations. This research work should be expanded to other areas of the Western States where difficulties are experienced in securing satisfactory water penetration into fine-textured soils.

(A) *6. Tillage implements for emergency wind erosion control*

Various types of implements are used for controlling soil movement. These include disc-type plows and field cultivators for roughening the surface and listers for ridging. Chisels are most common. It became apparent during the

spring of 1954, when wind erosion was acute in areas of the Great Plains, that many of the emergency measures were ineffective.

The use of proper tillage practices in dry farm areas during dry cycles when little or no residues are available is a very important problem in the Great Plains. Can subtillage equipment be used effectively even without residues on the surface? Similar questions can be raised about other available machinery. It is essential to know the best way to treat relatively bare soil to maintain soil structure and cloddy conditions until crops can be established.

Information is needed on (1) efficient tillage implements that can be employed to reduce or control soil movement, (2) suggested methods for the use of such machinery, and (3) proper timing of each emergency operation.

D. IMPROVEMENT OF SOIL FERTILITY FOR CONSERVATION FARMING

Although moisture is the predominating factor in limiting crop production west of the 30-inch rainfall belt, fertility (primarily nitrogen) also limits yields particularly on lighter-textured soils and in seasons of above normal precipitation. The use of fertilizers and other amendments is relatively new in the West. This is true for dry cropland, rangelands and extensive areas now coming under irrigation. Fertility decline in many areas is becoming critical.

(A) *1. Fertility studies*

Although research is underway, increased emphasis is needed on (1) factors influencing the availability of nitrogen, phosphorus, and other elements and (2) fertility-moisture-yield relations. Related to this work are investigations on a commercial fertilizer program in relation to soil moisture for irrigated and dry land crop farming including methods, time of application, and economic justification. Similar studies are needed on rangeland.

E. STRIPCROPPING

Stripcropping is effective in reducing erosion by both water and wind. Farmers in some areas are enthusiastic about stripcropping. In other areas, farmers do not accept stripcropping, even though their sloping cropland is being severely damaged by erosion. More specific information about the value of stripcropping in the control of runoff and erosion is needed. Information about strip widths, allowable deviation from the contour, and placement of diversions to better fit the practice to the land is also needed. If more definite and reliable information were available, SCS personnel would have a better chance to get stripcropping planned and applied on vast acreages of eroding slopes that are cultivated for row-crop production. Problems on which additional stripcropping research is needed are:

(A) *1. Wind erosion*

Further research is needed on the width and direction of strips for wind-erosion control. Research is needed to determine the effectiveness of contour strips, straight strips, and block farming on similar sites, in terms of erosion control, crop yields, economy of farm operations, and insect damage.

(A) *2. Stripcropping versus terracing*

Terraces have been widely used in several parts of the country, particularly the South. Under some soil, slope, and other conditions, terraces are not giving satisfactory results. On steep and irregular slopes, terraces interfere with the use of farm machinery. Research is needed to determine the relative effectiveness of contour strips and terraces on similar slopes, under the same rotations, and with all natural depressions in sod waterways. How would the two practices compare with respect to reduction of soil and water losses, cost of installation and maintenance, cost of operating farm machinery, insect damage, and in their effect on crop yields?

(A) *3. Strip width and diversion spacing*

The width of strips and diversion spacing has primarily been based on practice and limited research data. The latest data now available should be critically examined as a source of more exact methods. There are large areas of very productive land, intensively farmed, where erosion is severe. The slopes are irregular and in some cases have limestone ledges, and conventional strip cropping has not been accepted.

F. SOIL MANAGEMENT ON SPECIAL SOILS

Most of the soil and water conservation research conducted in the United States has been on soils of medium or light texture. SCS and other technicians need information concerning soil management on the heavy-textured and dark brown prairie soils in order to assist farmers better in planning farming systems.

(AA) *1. Heavy textured soils*

Information on soil and water losses and the effectiveness of soil and water conservation practices is decidedly lacking for the heavier textured soils. Data on which to base other soil, water, and crop management recommendations are also quite limited for these clay, clay loam, and silty clay loam soils. In the past, specifications have been developed largely by interpolating data obtained on silt loam soils. These have often proved inaccurate or inadequate.

The area involved over the entire United States is very extensive. Included are the red clay soils of the Superior, Kewannee, Ontonagon series in Wisconsin and Michigan, the Fargo-Bearden soils association in the Red River Valley of Minnesota and North Dakota, the Paulding-Nappanee and related soils of the Erie-Huron Lake Plain, Vergennes and Panton soils of the Northwest, the heavy clays of the Black Belt of Alabama, Texas, and Mississippi, the limestone valleys, the lower Mississippi River delta, and scattered areas throughout the Great Plains and Western States. Research information is needed on the following:

(*a*) Determination of soil and water losses under various cropping systems and on different degrees and lengths of slope.

(*b*) Relationship between soil depth and crop yields.

(*c*) Effects of various crop rotations, tillage and cultural and other conservation practices on physical soil conditions, soil and water loss, drainage and crop yields.

(*d*) Relative effectiveness of various drainage practices and combinations of practices (land smoothing, surface drainage, tiling, subsoiling, and mole drainage).

(A) *2. Dark-brown prairie (Chernozem) soils*

Information relative to soil and water losses and the effectiveness of soil and water-conservation practices is very limited on the dark-brown prairie (Chernozem) soils. Observations of contouring, stripcropping and terracing on soils such as Barnes silt loam indicate that these practices in combination with crop rotations are more effective than present specifications indicate. These specifications are based upon the interpolation of data from soils which may be inherently more erosive, less retentive of moisture, and generally lower in organic matter.

The Barnes and related soils cover an area of over 4½ million acres in Minnesota and a somewhat larger area in North and South Dakota.

Investigations on these prairie soils should be conducted along similar lines as outlined under (*a*), (*b*), and (*c*) for the heavy textured soils. In addition, research is needed to determine what practices are needed to control erosion on land with irregular or complex topography.

G. MANAGEMENT OF SALINE AND ALKALI PROBLEMS

Maximum crop production from several million acres of irrigated land in Western States is not now possible due to the presence of saline and alkali conditions. Large areas with otherwise high production potential are abandoned. Low-lying valley lands, generally of fine-textured soils, are first affected through the development of a shallow water table. Deterioration of soil structure is accelerated where the soil contains replaceable sodium. In water-deficit river basins irrigation water is being reused. This will inevitably impair the quality of irrigation water available for use in large areas of the West. Recommendations for research follow:

(AA) *1. Chemical properties and behavior*

Intensified basic research will continue to be needed on the properties and interactions of the salts and alkali compounds found in agricultural soils. The use of soil amendments to remove sodium is widely recommended, but further basic knowledge can point the way to more successful, simplified, and economical field methods of salinity and alkali control.

(A) *2. Practical field methods of control*

Present recommended treatments and methods for the removal of excess salt and alkali from soils are costly and time consuming. Simplified field testing methods and equipment are needed for use by the field conservationist in broadly determining the presence of soil salts and alkali on a qualitative and quantitative basis. There is an urgent need for field-scale research on methods of control and leaching on broad problem-soil areas of the Western United States.

(A) *3. Salt balance*

Western agriculture needs continuous investigations of the salt and alkali input and outflow of numerous river basins and irrigation areas. Only with such continuing records can trends be evaluated in terms of soil and water management practices.

(AA) *4. Effects of use of saline and alkali water for irrigation*

Continued research should be directed to a determination of the effects of use of irrigation water carrying salts and alkali of varying composition, combinations and quantity. The extremely complex effects upon the wide range of agricultural crop plants at all stages of development require continuing evaluation.

Other problems needing attention:

Attention is suggested for problems involving (1) fertilization and nutritive value of forage on saline and alkali soils and (2) the establishment and maintenance of vegetation on saline and alkali soils.

H. COVER CROPS

Ground cover, whether living or dead, is essential every day of the year for erosion control. During seasons when an income crop is not carrying out this objective, it is necessary to plant a special crop for the purpose. Research is needed as follows:

(A) *1. Cover for coarse textured soils*

Cover for such soils is needed following low residue producing crops, as in the case of cotton in the southern Great Plains.

(A) *2. Cover for dry conditions*

There is a serious need for cover crops that could be quickly established under relatively dry conditions to meet emergencies.

(A) *3. Orchards and small fruits*

It is very desirable to have effective cover that gives as little competition as possible for moisture and nutrients during critical growth periods of the fruit.

(A) *4. Ratings of cover according to protection and soil productivity*

It would be of material benefit to the soil-conservation program for research to establish ratings on crops showing their ability to produce living cover and protection residues, and to determine the effect of such crops on soil productivity.

(A) *5. Economy of cover crops*

One of the major pieces of information needed about cover crops is how much their use increases production of other crops. It is also necessary to learn what proportion of the fertilizer which is applied for production of cover crops is available to later crops.

6. Combination of legume covers with wood waste material

More research is needed to determine the value for erosion control of legume covers with wood byproducts, as winter vetch and wood chips, and the influence of the rate of nitrogen release on the yield and quality of the crop that follows.

I. CLIMATIC INFLUENCES

A thorough analysis of climatic factors in the Great Plains is needed to improve the general understanding of the hazards of ranching and farming, especially in marginal areas. With this information, attention can be focused on the cropping and farming systems best adapted to a permanent agriculture for the plains. Learning to live with extensive and local droughts is a must. Two problems on which research is needed are as follows:

(A) *1. Evaporation*

One of the most important climatic factors is evaporation. Studies at Goodwell, Okla., in the 17-inch rainfall belt shows that 11 inches or 65 percent of the precipitation is lost by evaporation and 2 inches or 13 percent is lost as runoff, leaving only about 4 inches for crop use. Thus, it is apparent that farmers need to learn how to reduce this tremendous loss of water needed for dependable crop production and adequate residues for soil protection.

(A) *2. Climatic limitations and their effect on use and treatment of lands*

A thorough analysis of climatic factors in marginal and submarginal areas along with crop yields would be highly beneficial in giving a better understanding of proper land use. Also, it would be helpful to have an accurate determination of precipitation zones.

V. Plant Management

A. Pastures

Progress in grassland farming has brought new problems in pasture management. These problems are acute in areas where new grassland farmers are growing new pasture grasses and legumes. Farmers want answers to many questions on which research information is inadequate. These problems include:

(AA) *1. Economic rate of fertilization*

Research is needed to determine the most profitable rates of applying fertilizers for adapted pasture grasses on various soil and land capability units, grown alone and in combination with legumes; economic limit of nitrogen fertilization of grasses grown without legumes; carrying capacities under optimum and severe grazing; and yields in terms of forage, TDN, beef and milk.

(A) *2. Methods of seeding grass and legumes*

With increasing acre yields of grain crops, they become less desirable as a nurse crop for grass and legumes. There needs to be an expansion of research related to this problem such as seeding between widely spaced crop rows.

(A) *3. Row spacing of grasses*

Certain tall grasses, such as fescue, tend to crowd legumes out of mixtures. Research is needed on management, including spacing of grass rows, rates, and dates of applying fertilizers to determine the influence of these factors on persistence of legumes in mixtures.

(AA) *4. Methods of applying lime and fertilizer to pasture sod*

Cost of soil amendments and reduced price of livestock products necessitates the most efficient use of lime and fertilizer, particularly maintenance applications. Research is needed to determine whether lime and fertilizer will give best results when applied on the surface without soil disturbance; applied on the surface and disked, applied by shallow drilling, or applied by deep drilling.

(A) *5. Management of sericea for pasture*

Sericea is one of the most drought-resistant upland pasture legumes for vast acreages of southern soils. Problems on which research is needed include: (1) Management in mixtures with perennial grasses, small grain, and annual winter legumes—grazing, mowing, and fertilizer practices that may reduce spring competition and maintain sericea stands; (2) the effect of lime and fertilizer on palatability, nutritional values, and longevity of stands; and (3) a comparison of beef and milk yields from sericea alone, from grass alone, and from both sericea and grass to which animals have access for free—choice grazing.

(A) *6. Irrigated pastures*

Research is needed to determine the best mixtures for use on irrigated pastures, fertilizer requirements, management systems, carrying capacities, and the cost-return ratios.

(A) *7. Mountain meadows*

Further research on mountain meadows is needed to determine effective management practices (1) on heavy soils with extreme sodbound conditions; (2) on sandy and/or cobbly soils with sodbound condition; (3) on areas with 3 to 18 inches of peat on the surface, making establishment of stand difficult; (4) on land under irrigation as compared with water table as the source of moisture;

(5) to maintain grass-legume balance and prevent dandelion and bluegrass encroachment under irrigation; (6) to maintain soil structure; and (7) for renovation of sodbound meadows having high water tables.

B. RANGE IMPROVEMENT

Almost 70 percent of all land in farms of the 17 Western States is grazed. Nearly all of this vast area of one-half billion acres is native or natural rangeland. One-half of the total income from farms and ranches in these States is from livestock and livestock products.

Much of the natural range area has deteriorated in forage production capacity through 75 to 100 years of use by livestock. Range livestock operators are now seeking the most effective management and land treatment measures to reduce erosion and to conserve water for increased forage production. Some of the most pressing problems with rangeland improvement are presented.

(AA) *1. The identification and evaluation of range sites*

Further basic research is needed to more specifically relate scientific ecological principles to the development and maintenance of a maximum, practical level of forage production on western ranges.

The range conservationist and the rancher must understand these principles in the identification of range sites and in an evaluation of current cover in relation to the potential for each site.

Suggested research should determine the soil and topographic factors that can be consistently associated with significant differences in vegetation within macroclimatic areas.

Refinement of methods is needed to improve existing standards for evaluating range site and range condition.

(AA) *2. Proper intensity of grazing on rangelands*

An important range improvement problem requiring continuing research is concerned with the degree to which range forage species can be grazed without adversely affecting their continued maximum production and their effectiveness as a cover for soil protection. It is important to know the best reason for use of the forage species in an association and the comparative palatibility and nutritive value of each species. These determinations are especially needed for each new strain or selection of indigenous or introduced forage species used in the range reseeding program.

(AA) *3. Range reseeding*

Many range reseeding trails have been undertaken throughout the western range States. Problems have been identified. Successful establishment has been secured on the more favorable sites. But overall results are indifferent at best. Intensified research in methods of reseeding is needed. The best time and rate of seeding, and methods of seedbed preparation (including the subjugation and control of undesirable range weeds and shrubs) require further research. The selection of species and of suitable mixtures requires further determination for the many different range sites. Continued emphasis should be placed on the breeding and selection of superior strains of range forage plants having special characteristics of effective soil cover and forage productions.

(A) *4. Mechanical treatment for range land improvement*

Mechanical practices such as pitting, furrowing, and ripping are being extensively used in the range conservation program of Western States. Basic research is needed to evaluate the effectiveness of these practices in influencing surface runoff, water infiltration, and improvement in vegetative cover. On what broad soil types and on what slopes can these measures be effectively used? To what extent and in what manner can their use contribute to the more successful establishment of an improved plant cover in conjunction with range reseeding?

(A) *5. Fertilization of rangelands*

Soil moisture rather than plant nutrients is the limiting factor in range forage production over vast areas of the Western range States. Significant areas are especially favorable sites and have an adequate supply of moisture to support the indigenous and adapted forage species. To what extent can forage production be increased by the addition of mineral plant nutrients? Which element or elements will produce response in improved plant vigor and total productiveness? What methods of application are economically feasible and adapted for use on extensive

range areas? And when and in what quantities can fertilizer applications be most effectively used in the range reseeding program.

The problems in eradication and control of weed, shrub, and tree species occupying millions of acres of western rangelands are presented under item No. VI–F.

C. PLANT MATERIALS

The search for and introduction of new plant materials and their subsequent improvement through selection and breeding has received much attention. This is a continuing process. There are a number of problems which either directly or indirectly influence the soil and water conservation program and whose solution depends upon the development and improvement of better plant materials. Continued emphasis is necessary by changing agricultural conditions. The particular plant materials needs which should receive major attention are:

(A) *1. Disease-resistant, nematode-resistant, cold-tolerant lupines*

Strains of both bitter and sweet lupines that are resistant to diseases and nematodes and which will withstand somewhat lower temperatures than present strains are needed for use in the southern Coastal Plains.

(A) *2. Cool-season perennial grass for southern Coastal Plains*

A hardy, vigorous, palatable, cool-season perennial grass is needed for the sandy soils of the southern Coastal Plains. An adapted grass for winter grazing similar to tall fescue, which is grown farther north, would make winter pasture production more dependable in this area.

(A) *3. A more palatable strain of tall fescue*

Tall fescue is a very dependable, productive cool-season grass in the upper and Middle parts of the Southeast, but present strains are neither as palatable nor as nutritious as other cool-season grasses that are much less productive under similar conditions. Development of a more palatable strain of tall fescue would materially aid in more widespread use of grass, particularly on areas subject to erosion.

(A) *4. Suitable pasture legume for Northeast*

Continued emphasis should be directed toward the development of a legume which will persist in permanent pastures in the northern part of the humid region. Birdsfoot trefoil appears to have promise on certain soil conditions, and research should be intensified on methods of establishing and managing this legume in areas where it is adapted. Other legumes that offer possibilities should be included in this investigation.

(A) *5. Grasses and legumes for sandy soils*

The search for and testing of better legumes and grasses adapted to sandy soils should be continued and strengthened. There are large areas of the lighter and fine-textured soils in many parts of the United States, for which more productive and persistent kinds of grasses and legumes are needed to provide forage and protective cover.

(A) *6. Shrub lespedeza for wildlife purposes in the northern part of the humid region*

The selection and development of a shrub lespedeza that is hardy, sets seed early in the season, and has a low tannin content, would add a great deal to the improvement of food and cover for wildlife in this area.

(A) *7. Windbreaks and shelterbelts in the Great Plains and West*

Continued research is needed to determine the best adapted trees and shrubs for windbreaks in this area. New species are also needed to meet special conditions in the area, such as high altitudes, alkaline and other difficult soil situations, and difficulties with diseases and insects.

(A) *8. More productive grasses and legumes for the Great Plains*

Continued emphasis should be given to the development of more productive grasses and particularly legumes, for this area. Warm-season grasses and legumes that provide better forage production and erosion control are desired.

(A) *9. Nonshottering strain of grandiflora vetch*

Grandiflora vetch is a dependable reseeding legume, after the soil is well stocked with seed. The principal limitation to its use as a valuable cover crop on cultivated land is its indeterminate ripening and shattering of seed, which makes quan-

tity production of seed very difficult. A strain is needed that will ripen a crop of seed at one time or its seed for several weeks after ripening.

(A) *10. Plants for severely eroded areas of C material*

Areas of severely eroded land in watersheds, along roadsides, and on limestone outcrop areas are very difficult to get covered with any now available. New plants are needed that will grow well under these adverse soil conditions.

D. WOODLANDS

Woodlands occupy more than 60 percent of the privately owned land in the Northeast, 50 percent in the Southeast, and 35 percent in the Nation. On the average, only about a third of it is adequately stocked with desirable trees. Of this privately owned woodland, 21 percent is on land of capability classes I to IV. Any shift to other land use without reliable knowledge of the economic returns possible from self-managed woodlands would be illadvised. The potential production increase for woodland under good management is as great as for any other single crop. Problems in need of research attention are listed as follows:

(AA) *1. Woodland management*

More easily applied systems of woodland management with an economic evaluation of expected returns should be developed. The lack of this information has retarded farmer acceptance of woodland management.

(A) *2. Site characteristics*

More information regarding the relation of tree species and growth to soil, slope drainage, climate, management, and other measurable factors would enable the farm planner to better fit the tree species to land capability and improve chances for early harvest of marketable products.

(A) *3. Utilization of low-grade woodland products*

Development of methods which would provide some income from low-grade products would furnish an incentive for the improvement of millions of acres of woods.

Other problems needing research attention or more emphasis:

Thinning immature stands (note the promising research results obtained with yellow poplar in West Virginia); improved tree planting technique (survival of planted trees is only 30 percent or less); establishment of tree and shrub cover on strip-mine spoil and other critical sites by direct seeding methods; control of rodent damage in establishment of tree stands; economical methods of eradicating undesirable woody vegetation in order to establish stands of desirable species; use of fire as a silvicultural tool; methods for the establishment and management of pine seed orchards; influence of woodland grazing on soil, water loss, and growth and production of woody species; economic use of cutover, rough and stony, or steep lands, as woodland, range, pasture, or cropland.

E. WINDBREAKS

The conservation values of windbreaks in the Great Plains should be evaluated so that technicians and farmers may know more definitely where and under what conditions windbreaks should be used. Thousands of windbreaks are in use in the Great Plains and Western States and offer opportunities for study under many conditions. More specifically, the immediate needs for information are as follows:

(A) *1. Conservation effectiveness of windbreaks*

An economic and evaluation study is needed to determine (1) the effectiveness and feasibility of field windbreaks in controlling or lessening soil blowing; (2) crop damage as a result of wind action; (3) effect of windbreaks in reducing sandblast damage to emerging crops; (4) amounts of soil moisture made available for crops by snowdrifts collected by windbreaks; (5) the area and degree of effectiveness of windbreaks of a given size, composition and spacing intervals in the reduction of wind velocity; and (6) economic effects of windbreaks, considering the value of land area required.

Other problems:

The Service needs research help to determine which types of plantings are best suited for wildlife and which selective sprays should be used to control weeds in windbreak plantings.

F. BRUSH AND WEED CONTROL

Wide areas of heavily grazed land in the United States have been invaded by weedy plants. Southwestern, Pacific coast, and intermountain areas support most of the brush; the Great Plains and bluestem belt of central United States have the smallest amount.

It has been found that mesquite, post oak, blackjack oak, and juniper have far less soil- and water-conservation value than good grasses. Where brush invasion has been heavy, the loss of forage production has been severe. Major brush species exist on ranges which have lost well over half of their better grasses.

Control of weeds and brush in pastures and on other uncultivated lands in the humid areas, as well as in the Western States, is essential to the conservation program. Problems on which research is needed include:

(AA) *1. Control of brush and weeds*

Further research in the development of the most feasible and economical methods, either mechanical or chemical, for the control and/or eradication of noxious shrubs and weeds is urgently needed on range lands as well as on pastures and uncultivated areas throughout the Nation.

An understanding of the relationship of soils and climate to the action of herbicides—how they act and how fast—on post oak, blackjack oak, shinnery oak, and associated hardwoods is important to the application of control measures on some 30 million acres of land in Texas, Oklahoma, Arkansas, and Missouri.

Additional information needed:

Further information is needed on the life histories of noxious range plants and on factors involved in their encroachment and control. Information is also needed on the grazing management and carrying capacity of savanna rangeland.

VI. ECONOMIC AND SOCIAL ASPECTS OF SOIL CONSERVATION

Conservation farming calls for marked changes in the traditional land and water use patterns and in farming customs. Examples are the need for conversion of some cotton and corn land to the production of forage and livestock in the Southeast; the desirability of grass as a replacement for wheat in some of the dry-farmed areas of California and in the Great Plains; the need for move cover crops in the Northeast, and the substitution of forage for grain in the feeding of livestock in Midwest area.

(AA) *1. Costs of and returns from conservation farming systems and practices*

Farmers need to know the prospective incomes from alternative systems of conservation farming. Farm planners need dependable information about costs and returns farmers may expect from the application and management of a complete soil- and water-conservation plan that is needed for the protection and improvement of land and water resources on the farm. This includes a need for information on costs and returns from the individual practices which make up the farm plan. Such practices include contouring and strip cropping, reseeding range, fertilization of crops and pastures, weed and brush control, and various methods used for irrigation and drainage. Returns should be measured in terms of pounds of meat, milk, wool, cotton, bushels of grain, tons of forage, days of pasture, cords of wood that may be expected from alternative practices and systems of conservation farming together with prospective prices so that farm income comparisons can be made.

To give maximum prediction value to the results, this research work should be done on the basis of specific groups of soils, land classes, and types of farming. Farmers and conservation technicians also need more definite information as to the types of rental agreements, financing arrangements, and other farm business matters which facilitate the adoption of conservation farming in different parts of the country.

(AA) *2. Costs of and returns from watershed protection and other group efforts*

While an individual farmer is principally concerned with conservation practices that will enable him to make a living and maintain or improve the productivity of his own land, the community of farmers must be concerned with the aggregate effects of these practices on the welfare of other individual farmers and on the community as a whole. The development of a watershed may bring benefits to the individual farmers and to the entire community. On the other hand, the change of marginal land from grain and other crop production to grazing may be necessary from the standpoint of conservation farming but may at the same time

reduce the income available for supporting schools, roads, and government activities. From a given area of farm land, the operators' income may be reduced also.

Under present conditions, serious problems of soil erosion, fertility loss and damage by flooding and sedimentation are prevalent in many watersheds. The Soil Conservation Service has responsibility for design of a program that will conserve the water and land resources and at the same time reduce flood damage and provide farmers and other users of the resources the opportunity of maintaining a satisfactory level of living. Owners are limited in the extent to which they can jeopardize their income in the interest of long-range conservation goals. Programs designed for a whole watershed are necessary to achieve the conservation objectives.

(AA) *3. Effects on the general economy of soil and water conservation*

The consequences to the farm income and to the balance of the Nation's food supply of the widespread adoption of conservation practices should be evaluated. What would be the consequences, for example, of putting into improved pasture and hay crops the vast acreages of land in the East and Southeast that are now in unimproved pasture, low-producing row crops, or in brush? Since animals are necessary to consume the forage, there would be increased production of meat and milk in these areas. From a long-time standpoint, there is little doubt that these products will be needed by the Nation. But how can this extra production be absorbed at the present time? Conservation farming, while protecting our farm and water resources, must provide an economic return for the farmer and the community enterprises that depend indirectly on the farm income.

Additional types of information needed:

Further economic investigations are needed on comparative costs of tillage of cultivated crops by land classes (from IIe to IIIe to IVe); consolidation of irrigation enterprises, bench terracing compared with other means of land preparation for irrigation, costs and returns of land clearing and alternative measures.

VII. BIOLOGY

One of the objectives of the Soil Conservation Service is to apply biological knowledge to the solution of problems of land use, control of erosion, and conservation of soil and water. The Service also aims to achieve desirable levels of production of useful fish and wildlife on land specifically planned for wildlife use. Landowners call upon Soil Conservation Service personnel for help in developing the useful fish and wildlife potentialities of both agricultural water and land.

Problems on which research information is needed include:

(AA) *1. Management of farm ponds for fish production*

Problems of fish production in farm ponds on which more research is needed include: Range of climatic conditions under which fish production in farm ponds is feasible; adopted kinds of fish; rates of stocking; management requirements; weed control; fluctuations in depth where pond water is used for irrigation; temperature criteria to distinguish cold-and warm-water ponds; fertilizer requirements; identification and control of microscopic algae toxic to fish sometimes resulting from fertilization of pond water; muskrat control and investigation of reasons why artesian water sometimes is toxic to fish.

(A) *2. Food-fish farming*

Rice-fish rotations are used in the Delta areas. Rice growers often are interested in flooding land following a crop of rice so as to control weeds. Some of them are asking for information about the production of fish while the land is flooded for weed control. Information is needed about depth of water, fertilizer requirements, kinds of fish to produce, management for profitable yields of fish.

(A) *3. Fish production on other agricultural lands*

Certain lands either may be used for cultivated crops or pasture, or they may be covered with water and used for fish production. Information is needed on the fish-producing potentialities, the cost, and returns from fish production is considering alternative land use.

(A) *4. Management of upland for game*

More information is needed on the type and distribution of food and cover needed by game birds and animals that will also fit into a soil and water conservation program for the farm. Individual areas have special problems such as the lack of satisfactory food plants for quail in southern Florida and on the calcareous soild of the Black Belt in Alabama and Mississippi.

(A) *5. Management of wet lands for the production of food for waterfowl*

Landowners are interested in the use of areas of wet lands for the production of food for waterfowl, particularly duck. Information is needed about the plant species to grow on different types of wet land and what cultural and management practices are needed for satisfactory production, particularly plant species which will produce duck feeds that will not be eaten up by rice birds and other kinds of wild birds.

(A) *6. Effect of timber management practices on forest wildlife*

A system of destroying hardwoods to produce pure stands of pine is followed in most of the South. What is the proper balance between pine and hardwoods that would be favorable to squirrels, turkeys, deer, and other forest wildlife?

VIII. PROBLEMS INDIRECTLY AFFECTING SOIL AND WATER CONSERVATION

The problems previously outlined directly affect the soil and water conservation program. Several problems, while not directly related to soil conservation, indirectly have a material effect on the acceptance of the program. The most important of these are as follows:

(A) *1. Forage utilization*

Comparative benefits of the different methods of utilizing forage crops with various classes of livestock should be studied further. Although research is being done in some States, a more concentrated investigation is suggested in which all aspects of the problem would be attacked, Research of this type should include comparisons of the various ways of handling forages for livestock, including: (1) Field chopping of green forage and feeding it in drylot; (2) making and feeding grass silage; and (3) pasturing.

2. Livestock bloat

With the increased emphasis on grassland farming and the development and wider use of succulent forages, farmers have sustained heavy losses of livestock through bloat. This has an adverse effect on the soil conservation program since farmers are reluctant to increase the proportion of certain legumes and grasses in crop rotations because of this hazard connected with grazing forage. A solution to the problem would aid the soil conservation program materially. Considerable research has been done on various segments of this problem. The work needs to be concentrated and greatly accelerated so that the causes of bloat can be accurately determined and remedial measures developed.

3. Disposal of industrial waste

Antipollution laws of several States require that industries dispose of their waste in a way to avoid pollution of streams and water supplies. One large canning company during the busy season may have one or two million gallons waste liquid per day. A growing number of communities face these problems. The quantity and quality of the material, the rate the soil can absorb it, and the effect on the soil, plants, and the ground water supply present special research problems.

Mr. ANDERSEN. One final comment and I am finished. I intend to have questions relative to the watershed protection program later on in the hearings.

Thank you, Mr. Williams and Mr. Peterson.

Mr. MARSHALL. Mr. Vursell.

Mr. VURSELL. Mr. Chairman, I am pretty well satisfied with what we have been able to accomplish in the past year in the Soil Conservation Service, and with the interest the Department of Agriculture has taken in the planning of the use of funds. I realize that when the budget was established it had for its purpose some control after giving study to the various requests, and while I am in sympathy to some extent with the position taken by the gentleman from Minnesota, yet at the same time I hope the answers in seeking further information for the committee will be sufficiently clear to establish that the general soil conservation will not be too greatly impeded by the small reduction, and that we can carry forward, as Mr. Andersen suggested, in the

form anticipated by the committee, the additional conservation with reference to soil and water, the act recently passed.

Not having had the advantage during the past 2 days of knowing all of the questions that have been brought up with reference to that, but having listened to the very many pertinent questions and the summation of the testimony which has brought out nearly all the questions I had in mind, I do not believe I care to ask further questions.

Mr. NATCHER. Mr. Chairman. Mr. Peterson, as I understand the budget proposals, the present proposals reduce by some $2 million Soil Conservation Service funds to soil conservation districts. Is that about right?

Mr. PETERSON. The operations fund is reduced $1,872,379, Mr. Natcher, although the total conservation effort, if credit is given to the nonrecurring items, is increased by about $1,917,000.

Mr. NATCHER. Mr. Peterson, according to the proposed budget items, there would be some $6 million for all watershed activities under Public Law 566. Is that about right?

Mr. PETERSON. The watershed protection item in which is Public Law 566, the estimate calls for $11 million in fiscal 1956.

Mr. NATCHER. Mr. Chairman, I want to agree with my friend and colleague, Mr. Andersen, as to these reductions pertaining to soil conservation. To me, soil conservation is one of our great achievements. I think that we should certainly scrutinize carefully all of the reductions. That is all I have, Mr. Chairman.

REPLACEMENT OF PASSENGER MOTOR VEHICLES

Mr. MARSHALL. We have an item here I don't believe we have discussed. You state that you need to replace 151 cars. How old are they? How many miles have they traveled? What are they used for?

Mr WILLIAMS. Mr. Chairman, on page 274 of the budget notes there is a discussion of the passenger motor vehicles. I believe I should ask Mr. Dorny to elaborate on that point.

Mr. DORNY. The budget proposes replacement of 151 passenger motor vehicles. The Service replacement standards are well within the standards set by the Bureau of the Budget for replacing motor vehicles. Our vehicles generally average around 70,000 miles and 7 years as against a standard of 6 years and 60,000 miles set by the Bureau of the Budget.

We are endeavoring to keep our fleet in good condition by following a planned replacement schedule established to operate within the funds now available each year. There was a time when we were a little bit behind but we are gradually catching up to the point where we are now able to keep our fleet in a safe operating condition.

There are no plans for additional vehicles. We have been reducing our fleet gradually up until this year but now plan to maintain it at the present level.

Mr. MARSHALL. How do you assign these automobiles?

Mr. DORNY. There is a master plan that has been laid out and a memorandum on the subject was issued to the field. The cars are assigned primarily to those technicians and administrative personnel,

State directors and others, who are required to perform travel and have to drive long distances, to rural areas, over several counties or districts, and between points where common carrier connections are not too good, generally within a State. The technicians in the work units all drive pickup trucks. There are very few of those that have passenger cars. The area conservationists who have longer distances to drive—their areas generally cover 5 to 10 or 12 districts—generally have an automobile.

AGE AND MILEAGE OF PASSENGER MOTOR VEHICLES

Mr. WILLIAMS. Mr. Chairman, the figures on pages 275 and 276 indicate both the mileage for the number of vehicles and the age of the vehicles.

Mr. MARSHALL. Without objection, that will be placed in the record at this point.

(The figures on the pages referred to are as follows:)

Below is itemized a statement as to the ages and mileage of passenger motor vehicles of the Soil Conservation Service as of June 30, 1954:

Mileage	Number of vehicles	Percentage	Mileage	Number of vehicles	Percentage
0 to 10,000	106	8.7	80,000 to 100,000	138	11.4
10,000 to 20,000	88	7.2	100,000 to 120,000	35	2.9
20,000 to 40,000	217	17.9	120,000 and over	7	.5
40,000 to 60,000	315	26.0			
60,000 to 80,000	309	25.4	Total	1,215	100.0

Year model	Number of vehicles	Percentage	Year model	Number of vehicles	Percentage
1954	35	2.9	1948	228	18.8
1953	199	16.4	1947	69	5.6
1952	102	8.4	Prior year models	34	2.8
1951	206	16.9			
1950	161	13.3	Total	1,215	100.0
1949	181	14.9			

WATERSHED PROTECTION

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$5,000,000	$7,250,000	$11,000,000
Transferred to "Salaries and expenses, Office of the Solicitor, Agriculture," pursuant to Public Law 663		−40,000	
Adjusted appropriation or estimate	5,000,000	7,210,000	11,000,000
Unobligated balance brought forward		682,718	
Reimbursements from non-Federal sources	411	150	7,500
Reimbursements from other accounts	1,137	8,025	7,900
Total available for obligation	5,001,548	7,900,893	11,015,400
Unobligated balance carried forward	−682,718		
Obligations incurred	4,318,830	7,900,893	11,015,400

NOTE.—Reimbursements from non-Federal sources above are from proceeds of sales of personal property (40 U. S. C. 481 (c)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
1. Watershed protection	$4,317,282	$7,892,718	$11,000,000
2. Obligations under reimbursements from non-Federal sources	411	150	7,500
Total direct obligations	4,317,693	7,892,868	11,007,500
Obligations Payable Out of Reimbursements From Other Accounts			
1. Watershed protection	1,137	8,025	7,900
Obligations incurred	4,318,830	7,900,893	11,015,400

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
SOIL CONSERVATION SERVICE			
Summary of Personal Services			
Total number of permanent positions	203	463	702
Full-time equivalent of all other positions	58	75	96
Average number of all employees	301	573	878
Number of employees at end of year	378	650	992
Average salaries and grades:			
General schedule grades:			
Average salary	$4,829	$4,394	$4,280
Average grade	GS–7.4	GS–6.8	GS–6.5
Personal service obligations:			
Permanent positions	$1,182,949	$2,256,518	$3,425,428
Positions other than permanent	160,866	210,078	286,338
Regular pay in excess of 52-week base	3,729	8,996	12,159
Payment above basic rates	5,236	25,608	23,575
Total personal service obligations	1,352,780	2,501,200	3,747,500
Direct Obligations			
01 Personal services	1,351,910	2,499,700	3,746,000
02 Travel	180,515	146,375	177,800
03 Transportation of things	24,668	41,600	46,300
04 Communication services	13,133	28,300	35,300
05 Rents and utility services	4,742	26,100	56,500
06 Printing and reproduction	32,782	30,500	35,900
07 Other contractual services	2,203,236	4,113,170	5,760,500
Services performed by other agencies	3,442	27,000	22,600
08 Supplies and materials	83,936	210,400	286,700
09 Equipment	138,358	222,100	236,500
13 Refunds, awards, and indemnities	10	1,200	1,200
15 Taxes and assessments	3,574	6,000	7,000
Subtotal	4,040,306	7,352,445	10,412,500
Deduct charges for quarters and subsistence	190		
Total direct obligations	4,040,116	7,352,445	10,412,500
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	870	1,500	1,500
02 Travel		525	400
Total obligations payable out of reimbursements from other accounts	870	2,025	1,900
Obligations incurred	4,040,986	7,354,470	10,414,400

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOTMENT TO FOREST SERVICE			
Summary of Personal Services			
Total number of permanent positions	4	8	8
Full-time equivalent of all other positions	19	73	73
Average number of all employees	34	92	92
Number of employees at end of year	63	73	73
Average salaries and grades:			
General schedule grades:			
Average salary	$5,315	$4,918	$4,918
Average grade	GS-8.3	GS-6.8	GS-6.8
Personal service obligations:			
Permanent positions	$74,240	$82,978	$82,978
Positions other than permanent	46,796	152,776	152,776
Regular pay in excess of 52-week base	135	171	171
Payment above basic rates	67	45	180
Total personal service obligations	121,238	235,970	236,105
Direct Obligations			
11 Personal services	120,971	232,970	233,105
12 Travel	17,436	28,294	28,550
13 Transportation of things	3,009	5,891	6,000
14 Communication services	2,779	3,518	3,550
15 Rents and utility services	1,905	2,303	2,320
16 Printing and reproduction	406	640	650
17 Other contractual services	22,183	31,750	32,150
Services performed by other agencies	444		
18 Supplies and materials	60,939	110,989	113,975
19 Equipment	3,675	3,693	3,700
20 Lands and structures	1,776	4,734	4,800
41 Grants, subsidies, and contributions	21,259	64,460	65,000
43 Taxes and assessments	795	1,181	1,200
Total direct obligations	257,577	490,423	495,000
Obligations Payable Out of Reimbursements From Other Accounts			
11 Personal services	267	3,000	3,000
12 Travel		300	300
13 Transportation of things		250	250
17 Other contractual services		1,000	1,000
18 Supplies and materials		1,405	1,405
43 Taxes and assessments		45	45
Total obligations payable out of reimbursements from other accounts	267	6,000	6,000
Obligations incurred	257,844	496,423	501,000
ALLOCATION TO AGRICULTURAL RESEARCH SERVICE			
Total number of permanent positions	1	7	14
Average number of all employees	2	6	13
Number of employees at end of year	1	6	13
Average salaries and grades:			
General schedule grades:			
Average salary	$5,940	$6,696	$6,526
Average grade	GS 11.0	GS-11.0	GS-10.4
11 Personal services:			
Permanent positions	$15,571	$39,620	$79,540
Regular pay in excess of 52-week base	24	180	300
Total personal services	15,595	39,800	79,840
12 Travel	4,338	7,600	15,000
14 Communication services	25	100	200
16 Printing and reproduction	30		
17 Other contractual services		2,400	4,800
43 Taxes and assessments	12	100	160
Obligations incurred	20,000	50,000	100,000

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estim
SUMMARY			
Summary of Personal Services			
Total number of permanent positions	208	478	
Full-time equivalent of all other positions	77	148	
Average number of all employees	337	671	
Number of employees at end of year	442	729	1
Average salaries and grades:			
General schedule grades:			
Average salary	$4,844	$4,446	$4
Average grade	GS-7.4	GS-6.8	GS
Personal service obligations:			
Permanent positions	$1,272,760	$2,379,116	$3,587
Positions other than permanent	207,662	362,854	439
Regular pay in excess of 52-week base	3,888	9,347	12
Payment above basic rates	5,303	25,653	23
Total personal service obligations	1,489,613	2,776,970	4,063,
Direct Obligations			
01 Personal services	1,488,476	2,772,470	4,058,
02 Travel	202,289	182,269	221,
03 Transportation of things	27,677	47,491	52,
04 Communication services	15,937	31,918	39,
05 Rents and utility services	6,647	28,403	58,
06 Printing and reproduction	33,218	31,140	36,
07 Other contractual services	2,225,419	4,147,320	5,797,
Services performed by other agencies	3,886	27,000	22,
08 Supplies and materials	144,875	321,389	400,
09 Equipment	142,033	225,793	240,
10 Lands and structures	1,776	4,734	4,
11 Grants, subsidies, and contributions	21,259	64,460	65,
13 Refunds, awards, and indemnities	10	1,200	1,
15 Taxes and assessments	4,381	7,281	8,
Subtotal	4,317,883	7,892,868	11,007,
Deduct charges for quarters and subsistence	190		
Total direct obligations	4,317,693	7,892,868	11,007,
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	1,137	4,500	4,
02 Travel		825	
03 Transportation of things		250	
07 Other contractual services		1,000	1,
08 Supplies and materials		1,405	1,
15 Taxes and assessments		45	
Total obligations payable out of reimbursements from other accounts	1,137	8,025	7,
Obligations incurred	4,318,830	7,900,893	11,015,

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimat
Obligated balance brought forward		$2,215,054	$2,157,
Obligations incurred during the year	$4,318,830	7,900,893	11,015,
	4,318,830	10,115,947	13,173,
Reimbursements	−1,548	−8,175	−15,
Obligated balance carried forward	−2,215,054	−2,157,772	−3,327,
Total expenditures	2,102,228	7,950,000	9,830,
Expenditures are distributed as follows:			
Out of current authorizations	2,102,228	5,070,000	7,730,
Out of prior authorizations		2,880,000	2,100,

BUDGET JUSTIFICATION DATA

Mr. MARSHALL. We will now proceed to Watershed Protection. We will insert at this point, pages 226 and 230 through 249 of the justifications.

(The pages referred to are as follows:)

Watershed protection

Appropriation Act, 1955	$5,500,000
Supplemental appropriation for 1955 (Supplemental Appropriation Act, 1955)	1,750,000
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of the Solicitor, Agriculture" for legal assistance	−40,000
Base for 1956	7,210,000
Budget estimate, 1956	11,000,000
Increase (for the installation, on a cost-sharing basis with local interests, of planned upstream watershed improvement measures in small watersheds)	+3,790,000

Project statement

Project: Watershed protection:	
1954	$5,000,000
1955 (estimated)	[1] 7,210,000
Increase	+3,790,000
1956 (estimated)	11,000,000

[1] In addition, $682,718 is available from prior year balance.

STATUS OF PROGRAM

RECENT PROGRESS

Allocation of watershed protection funds

Funds available for 1954 and 1955, and proposed for 1956 for the planning and installation of watershed protection works of improvement are allocated to the cooperating agencies in the Department, as follows:

Agency	1954 obligations	1955 estimate	1956 estimate
Soil Conservation Service	$4,039,705	$7,352,295	$10,405,000
Forest Service	257,577	490,423	495,000
Agricultural Research Service	20,000	50,000	100,000
Total	4,317,282	7,892,718	11,000,000

Preparation of watershed work plans

Preparation of final work plans for the 60 active pilot-demonstration watersheds have been essentially completed. Initiation of work on planning the Muster Creek, Mont., watershed has been delayed until the spring of 1955 at the request of the project sponsors. The work plans prepared specify the land-treatment and water-control measures that are necessary to stabilize the watershed lands and reduce flood-water and sediment damage. Each plan also includes a schedule for installation of the recommended watershed protection measures.

As additional watersheds are approved for planning under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Cong.), work plan parties will be assigned to assemble necessary hydrologic, engineering, economic, and sedimentation data and to prepare the watershed work plans. These plans will provide the basis for approval or disapproval of the projects for installation of watershed works of improvement for flood prevention and the agricultural phases of conservation, development, utilization, and disposal of water. The work plans will include planned works of improvement, cost-benefit data, cost estimates, and cost-sharing arrangements in connection with installation of meas-

ures, an installation schedule, and arrangements for local assumption of responsibility for operating and maintaining the works of improvement installed. It is estimated that about 25 watershed work plans will be prepared in the 1955 fiscal year for projects requested to be established under authority of Public Law 566, 83d Congress, and that approximately 45 such work plans will be prepared in 1956.

Specialists from the Forest Service will be assigned to work plan parties as needed to handle the forestry aspects of work plan preparation for which that Service is responsible.

The Agricultural Research Service has rendered assistance with economic evaluations in connection with preparation of work plans for the pilot demonstration watersheds and in training SOS field personnel in this work. Under a working agreement between that agency and the Soil Conservation Service, the ARS will provide economic evaluations of plans for works of improvement for watersheds which will be designated under Public Law 566. That agency will also furnish assistance in the preparation of recommendations to the Department in connection with the economic aspects in the development of policies and procedures under the Watershed Protection and Flood Prevention Act; assist in the review and analysis of the economic aspect of resource development proposals; and assist on special economic evaluation problems which may develop in connection with particular watershed projects, or as they pertain to local areas or interested local organizations or groups.

Pilot watersheds selected for installation of protection program

The following watersheds were selected for installation of needed watershed protection measures under the pilot watershed or demonstration program inaugurated by the 1954 Department of Agriculture Appropriation Act:

Watershed	State	County	Estimated total Federal cost
Active projects:			
Adobe Creek	California	Lake	$488,875
Aiken Creek	Kansas	Chautauqua and Montgomery	109,829
Baboosic River	New Hampshire	Hillsboro	71,177
Ball Creek	New York	Chautauqua	75,374
Brownell Creek	Nebraska	Otoe	421,237
Kiowa Creek	Colorado	Elbert, El Paso, Arapahoe, Adams, Weld, and Morgan.	[1] 560,177
Calaveras Creek	Texas	Bexar	355,629
Calleguas Creek	California	Ventura and Los Angeles	1,510,000
Chippewa River tributaries and Hawk.	Minnesota	Swift, Chippewa and Kandiyohi	1,114,775
Cory Creek	Pennsylvania	Tioga	100,808
Cow Bayou	Texas	McLennan and Falls	716,595
Dean Creek	New York	Tioga	111,897
Double Creek	Oklahoma	Washington and Osage	314,079
Dry Creek	Idaho	Ada and Boise	252,717
Do	Nebraska	Red Willow and Frontier	248,513
East Willow Creek	Minnesota	Fillmore	336,652
East Fork of Falling River	Virginia	Appomatox and Campbell	225,821
East Branch of South Fork of Blackwater.	Missouri	Johnson	278,851
Escondido Creek	Texas	Karnes	644,326
Flat Creek	Indiana	Pike	262,831
Floyd River, tributaries, Upper Plymouth Creek and Nassau watershed.	Iowa	Plymouth and Sioux	150,604
Great Brook	New York	Chenango	98,556
Green Creek	Texas	Erath	729,003
Hadley Creek	Illinois	Pike and Adams	1,153,485
Honey Creek	Iowa	Lucas	199,482
Indian Creek	Nebraska	Gage and Lancaster	855,514
Little Delaware-Mission Creeks.	Kansas	Brown, Jackson, and Atchison	225,374
Little Hoosick above Berlin	New York and Massachusetts.	Rensselaer and Berkshire	359,524
Lost Creek	Missouri	Lincoln	202,814
Do	Kansas	do	147,182
Mission Creek	Washington	Chelan	336,689
Money Creek	Illinois	McLean	233,625
Mule Creek	Iowa	Mills	384,960
Muster Creek	Montana	Custer	[2] 300,000
North Fork of the Broad River.	Georgia	Stephens and Franklin	701,536
North Fork of the Rough River.	Kentucky	Breckenridge	325,381

[1] Buckhorn and South Platte tributaries, Colorado redesignated Kiowa Creek watershed, Aug. 1, 1954.
[2] Muster Creek, Mont. Initiation of project delayed for 1 year, to April 1955.

Watershed	State	County	Estimated total Federal cost
Active projects—Continued			
Old Tom Creek	Illinois	Warren and Henderson	$205,314
Pequest (above USGS gaging station).	New Jersey	Sussex and Warren	649,929
Pleasant Creek	Utah	Sanpete	292,720
Plum Creek	Kentucky	Shelby, Spencer, Jefferson, and Bullitt.	490,345
Red River, Upper	do	Morgan and Wolfe	580,586
Rocky Fork, Clear Creek	Ohio	Highland	253,474
Salem Fork of Ten Mile Creek.	West Virginia	Harrison	253,556
Sandia Mountain tributaries, Bernalillo watershed.	New Mexico	Sandoval and Bernalillo	194,890
Santaquin	Utah	Utah	85,839
Scott watershed	South Dakota	Union	87,697
Six Mile Creek	Arkansas	Logan and Franklin	1,548,014
Snipe Creek	Kansas	Marshall	138,922
Switzler Creek	do	Osage	189,127
Third Creek	North Carolina	Alexander, Iredell, and Rowan	551,724
Tongue River	North Dakota	Cavalier and Pembina	2,039,092
Twelve Mile Creek	South Carolina	Pickens	776,797
Upper Green	Kentucky	Lincoln and Casey	362,549
Upper Hocking River including Hunter's Run.	Ohio	Fairfield	683,000
Upper Hondo, tributaries of.	New Mexico	Lincoln and Otero	750,000
Upper Salt Swedeburg tributaries of Salt Creek	Nebraska	Lancaster and Saunders	1,563,611
Walnut Creek	California	Contra Costa	2,237,335
West Fork of Kickapoo	Wisconsin	Vernon and Monroe	243,495
White Tanks	Arizona	Maricopa	218,000
Wolf River tributaries, Marys and Sand Creeks.	Tennessee	Shelby and Fayette	383,243
Projects discontinued:[2]			
Bills Creek	Kansas	Jackson	21,244
Spring Valley Creek	Washington	Walla Walla	4,293
Projects designated but not activated:[4]			
Jacks Run	Pennsylvania	Westmoreland	0
South and North Fork of the Crow.	Minnesota	Kandiyohi, Meeker, Stearns, Pope, and Renville.	0
Squaw Peak-South Mountain.	Arizona	Maricopa	0
Grand total			[5] 29,408,688

[2] Costs shown were for initial investigations and planning of work needed in the watersheds. The local sponsoring agencies decided against going ahead with the works of improvement at this time so the project designation was canceled; no further work on the projects under this program is anticipated.

[4] No qualified local agencies were willing to sponsor these projects; consequently no work has been initiated.

[5] These are the latest work-plan figures. As the program develops and work plan cost estimates are modified in accordance with the scheduled works of improvement, it is expected that cost of the total program will not exceed the original estimate of $28,706,000.

INSTALLATION ACTIVITIES OF THE SOIL CONSERVATION SERVICE

Local cooperation

The 60 active pilot demonstration watersheds are sponsored or cosponsored by soil conservation districts. These districts provided local leadership to accelerate the planning and installation of land treatment measures. They have also accepted responsibility for obtaining necessary easements and rights-of-way for structural and other works of improvement and for operating and maintaining these installations. Preliminary work plans show that local interests will bear approximately 52 percent of watershed works of improvement costs.

Watershed improvement measures

The following tables show the progress in completing soil surveys and conservation plans on the farms and the major watershed improvement measures planned and installed cooperatively by the Soil Conservation Service and local cooperators in pilot demonstruation watersheds. Structural and land stabilization measures are being installed primarily by local contractors. The Service is also providing additional technical assistance to farmers and ranchers in planning and establishing soil and water conservation practices and sound land use. The purpose is to accelerate the application of land treatment measures which contribute to flood prevention and thus provide necessary protection to structural and other works of improvement installed primarily for flood prevention.

Soil surveys and farm conservation plans

Item	Totals in project area (including "conservation operations")		1954 (actual) with watershed protection funds
	1954 actual	Cumulative June 30, 1954	
Soil surveys (acres)	513,056	1,810,126	252,507
Total number cooperators	1,334	5,746	1,140
Basic conservation plans:			
Number	420	3,862	290
Acres	57,997	755,893	43,965

Works of improvement

Measure	Unit	Estimated needs shown in work plan	Accomplished as of June 30, 1954	1954 (actual) with watershed protection funds
Land treatment measures:				
Contour farming	Acre	251,842	20,593	6,896
Cover cropping	do	143,382	19,034	824
Crop residue management	do	484,847	68,624	2,244
Strip cropping	do	109,187	8,850	727
Pasture seeding	do	114,782	7,734	913
Range seeding	do	41,219	5,695	59
Range improvement	do	178,337	23,820	2,550
Terraces	Mile	20,228	1,477	346
Diversions	do	1,872	241	7
Farm ponds	Number	3,320	284	51
Waterway development	Acre	18,928	2,252	534
Tree planting	do	26,867	779	489
Woodland protection	do	75,307	2,758	2,100
Wildlife area improvement	do	7,491	348	2
Erosion controlled structures	Number	14,732	553	9
Seeding permanent hay	Acre	5,661	15	13
Structural and land stabilization measures:				
Floodwater-retarding structures	No.	565		
	Acre-feet	185,489		
Stabilizing and sediment control:				
(a) Structures	Number	2,241	287	287
(b) Silt and debris basins	do	362		
Subwatershed waterway improvement:				
(a) Outlet construction	Mile	391		
(b) Grassed waterways	Acre	832	6	6
Stream channel improvement:				
(a) Channel stabilization	Mile	159		
(b) Channel improvement	do	536		
Diversion ditches and dikes:				
(a) Diversion construction	do	81		
(b) Levees and dikes	do	11		
	Cubic yard	385,322		
Floodways: (a) Channel excavation	Mile	50		
	Cubic yard	2,101,815		
Stabilization of critical areas:				
(a) Roadside erosion control	Mile	591	28	28
(b) Revegetation:				
1. Grasses and legumes	Acre	23,674	553	553
2. Woody plants	do	19,925	788	788

Preparation for program evaluation

Arrangements have been made with the United States Geological Survey to secure from that agency, on a reimbursable basis, certain equipment, services, and data which will enable the Soil Conservation Service to evaluate the effectiveness of upstream watershed improvement measures in retarding waterflow, controlling runoff and erosion, and reducing sedimentation and flood damage. The Geological Survey will construct or install stream-gaging and sediment-sampling stations, water-level recorders, crest gages, etc. They will collect data recorded on instruments, change charts, maintain instruments and facilities, take sediment samples, and provide laboratory analysis of them and perform necessary compilation and analysis of observed and recorded data.

Reimbursable arrangements have also been concluded with the United States Weather Bureau to install, inspect, and maintain 63 recording rain gages and 109 standard rain gages.

Status of work on individual demonstration watersheds

The following statements show the major flood prevention measures planned for installation by the Soil Conservation Service and local cooperators in the individual pilot demonstration watersheds and the progress on works of improvement made as of December 1, 1954:

White Tanks, Ariz.—All construction work on this project was completed in July 1954. Works of improvement primarily for flood prevention consisted of 2 earthfill floodwater-retarding structures (2,655 and 1,026 acre-feet), 6 debris and desilting basins, and 11 miles of diversion dikes and ditches. All planned land treatment measures which contribute to flood prevention have been applied by the sponsors. The local people paid $215,537 and the Federal Government $192,088 of the total installation costs on this project.

Six Mile Creek, Ark.—The major flood-prevention measures planned to be installed in this watershed are 26 floodwater-retarding structures and 22.9 miles of stream channel improvement. Good progress has been made. Six floodwater-retarding structures representing 5,661 acre-feet of floodwater storage capacity have already been installed. Contracts for construction of five additional floodwater-retarding structures will be awarded this fiscal year. Progress on establishment of land treatment measures which contribute to flood prevention has been retarded somewhat by 3 consecutive years of drought. However, the key land treatment practices are about on schedule since farmers have concentrated on pasture and feed programs.

Adobe Creek, Calif.—The major flood-prevention measures planned for installation in this watershed are 2 floodwater-retarding structures and 6.46 miles of stream channel improvement. None of these measures have yet been installed. Considerable difficulty is being experienced in obtaining easements for the two structures which is the main part of the work on this project. Land treatment measures which contribute to flood prevention are being applied to farmlands at a satisfactory rate.

Calleguas Creek, Calif.—The major flood-prevention measures planned for this watershed are 8 floodwater-retarding structures, 8 stabilizing and sediment-control structures, 163 debris basin and channel grade stabilization structures, 19.5 miles of diversion ditches and dikes, 8 miles of streambank stabilization, and 39.6 miles of channel capacity improvement. The following measures were completed or under construction as of November 30, 1954: 8 stabilization and sediment-control structures, 0.7 of a mile of channel capacity improvement and 1.6 miles of streambank stabilization. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Walnut Creek, Calif.—The major flood-prevention measures planned for this watershed are 164 stabilizing and sediment-control structures, 9.68 miles of streambank and channel stabilization and 43.9 miles of channel capacity improvement. Five drop spillway structures and 0.2 of a mile of streambank stabilization have already been installed. The program of applying land treatment measures which contribute to flood prevention is progressing satisfactorily.

Kiowa Creek, Colo.—The major flood-prevention measures planned for this watershed are 35 floodwater-retarding structures, 6 stabilizing and sediment-control structures, and 1.2 miles of stream channel improvement. Four floodwater-retarding structures are now under construction. A meeting with local cooperators was held December 1, 1954, at which time plans were laid to reemphasize speed-up establishment of land-treatment measures which contribute to flood prevention. This work has been delayed due to drought.

North Fork of the Broad River, Ga.—The major flood-prevention measures planned for this watershed are 10 floodwater-retarding structures, 15 stabilizing and sediment-control structures, 40 miles of stream channel improvement, 96 miles of roadside erosion control, and stabilization of 3,666 acres of critical runoff and sediment-producing area. Work completed includes construction of 3 floodwater-retarding structures, 1 mile of channel improvement, and revegetation of 210 acres of critical sediment-producing area. The longest and most severe drought on record has materially retarded application of vegetative control measures on this project.

Dry Creek, Idaho.—The major flood-control measures planned for this watershed are 37 stabilizing and sediment-control structures, 7 miles of stream channel improvement, and 3½ miles of channel capacity improvement. Installation of

these measures has proceeded according to schedule, with six 6-foot drop structures already completed and functioning. No land-treatment measures which contribute to flood prevention were scheduled for application during the 1954 season, but 20 acres of range actually were reseeded. The planned range management program is proceeding as satisfactorily as it can pending the construction of structural measures necessary to a sound program.

Hadley Creek, Ill.—The major flood-prevention measures planned for this watershed are 4 floodwater-retarding structures, 331 stabilizing and sediment-control structures, 80 miles of subwatershed waterway improvement, 1.5 miles of stream channel improvement, and 21 miles of diversion ditches and dikes. Four drop inlet structures are now under construction. The application of land-treatment measures which contribute to flood prevention is proceeding satisfactorily.

Money Creek, Ill.—The major flood-prevention measures planned for this watershed are 93 stabilizing and sediment control structures, 12 miles of waterway improvement, and 2.7 miles of diversion ditches and dikes. Large absentee ownership and high tenancy in this area and the fact that it is a cash grain area and one of high agricultural income has definitely tended to retard progress in getting watershed protection treatment measures applied. The problem in this watershed is primarily one of gully stabilization. Farmers have been rather slow to recognize the need for controlling this problem along with the job of establishing land treatment measures which contribute to flood prevention as long as they are getting a relatively high corn and soybean yield.

Old Tom Creek, Ill.—The major flood-prevention measures planned for this watershed are 26 stabilizing and sediment control structures and 12.4 miles of waterway improvement. One floodwater-retarding structure, 1 notch dam, and 1 drop spillway have already been constructed. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Flat Creek, Ind.—The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 52 stabilizing and sediment control structures, 16.2 miles of waterway improvement, 7.5 miles of stream channel improvement, 27 miles of roadside erosion control, and stabilization of 328 acres of critical runoff and sediment-producing area. Three stabilizing and sediment control structures have been completed. An additional contract will be awarded approximately February 1, 1955, for 6 stabilizing structures. One of the problems that has retarded establishment in this project of land treatment measures which contribute to flood prevention has been the rather intensive drought in southern Indiana this past summer and fall.

Floyd River tributaries, Iowa.—The major flood-prevention measures planned for this watershed are six stabilizing and sediment control structures. None of these structures has been completed nor is any yet specifically scheduled for construction. The land-treatment measures which contribute to flood prevention that have been established to date include 900 acres of contour farming, 17.5 miles of terracing, 3.5 acres of waterway development and 11,855 lineal feet of tile drains in connection with waterway development.

Honey Creek, Iowa.—The major flood prevention measures planned for this watershed are 40 stabilizing and sediment control structures, 3.6 miles of waterway improvement, 14 miles of roadside erosion control, and stabilization of 40 acres of critical runoff and sediment-producing area. Four structures have been completed and two drop inlet structures are under construction. Three-quarters of a mile of channel improvement has also been completed. Land treatment measures which contribute to flood prevention are being applied at the rate scheduled in the project work plan.

Mule Creek, Iowa.—The major flood prevention measures planned for this watershed are 27 stabilizing and sediment control structures, 8.6 miles of waterway improvement, and 14 miles of roadside erosion control. Three drop inlet structures have been completed and two contracts have been awarded for construction of seven drop inlet structures. Since establishment of the project an additional 225 acres of contour farming, 17 miles of terracing, 1.8 miles of diversion terrace, and 10 acres of farm waterway have been established and 1,315 acres of farmland planned for conservation. Extensive amounts of land treatment measures which contiribute to flood prevention had already been established prior to initiation of the watershed protection project.

Aiken Creek, Kans.—One floodwater-retarding structure is the only flood prevention measure planned and it has been completed. Severe drought slowed down application in 1954 of land treatment measures which contribute to flood prevention. It is expected, however, that a substantial amount of the necessary land treatment measures will be applied within the next 3 years.

Little Delaware-Mission Creeks, Kans.—The major flood prevention measures planned for this watershed are 8 floodwater-retarding structures, 25 stabilizing and sediment control structures, and 6.4 miles of waterway improvement. Three floodwater-retarding structures and two stabilizing and sediment control structures have been completed. One floodwater-retarding structure and nine stabilizing and sediment control structures have been planned for construction next spring and summer. Excellent progress is being made on the establishment of land treatment measures which contribute to flood prevention.

Lost Creek, Kans.—The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 5.5 miles of channel capacity improvement, and 6.3 miles of floodways. All easements for the three floodwater-retarding structures have been obtained by the local sponsoring organization. It is planned to begin construction on one structure next spring. Application of land treatment measures which contribute to flood prevention has been accelerated, particular attention being given to shaping waterways and building terraces. Serious drought conditions in 1953 and 1954 hindered establishment of grasses in waterways and pasture seeding.

Snipe Creek, Kans.—The major flood prevention measures planned for this watershed are 13 floodwater-retarding structures and 7 stabilizing and sediment control structures. Three floodwater-retarding structures have been completed. Two additional floodwater-retarding structures are planned for construction next spring. Excellent progress is being made in the establishment of land treatment measures which contribute to flood prevention.

Switzler Creek, Kans.—The major flood prevention measures planned for this watershed are five floodwater-retarding structures. Construction has been completed on one of these structures. Two additional structures are planned for construction next spring. Three years of serious drought have followed the floods of 1951 which has not been favorable to establishment of treatment measures which contribute to flood prevention.

North Fork of the Rough River, Ky.—The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 10 miles of waterway improvement, 5 miles of roadside erosion control, and stabilization of 6,057 acres of critical runoff and sediment-producing area. This program is on schedule. One floodwater-retarding structure and 5 miles of roadside erosion control have been completed and 314 acres of grasses and legumes have been established in sediment-producing areas. Land treatment measures applied to date include 405 acres of pasture seeding and 493 acres of contour farming. Farm planning assistance has been given on 5,487 acres.

Plum Creek, Ky.—The major flood prevention measures planned for this watershed are 13 floodwater-retarding structures, 95 miles of waterway improvement, 21 miles of stream channel improvement, 12 miles of roadside erosion control, and revegetation of 450 acres of critical sediment-producing area. One floodwater-retarding structure has been completed, contracts have been awarded for two others, plans are complete for a fourth structure, and planning is in progress for three additional structures. In addition 3 miles of waterway improvement have been completed. Application of land treatment measures which contribute to flood prevention is on schedule.

Red River, Ky.—The major flood prevention measures planned for this watershed are 185 miles of stream channel improvement, 51.3 miles of roadside erosion control, revegetation of 6,585 acres of critical sediment-producing area. There has already been completed 2.4 miles of stream channel improvement, 2.3 miles of roadside erosion control, and revegetation of 190 acres of sediment-producing area. Inability of district supervisors to secure all easements has prevented the awarding of one contract. Land treatment measures applied include 1 mile of diversion, 190 acres of cover crops, 70 acres of pasture seeding and 127 acres of pasture improvement.

Upper Green River, Ky.—The major flood prevention measures for this watershed are 5 floodwater-retarding structures, 12 miles of stream channel improvement, 3 miles of roadside erosion control, and revegetation of 1,312 acres of critical sediment-producing area. Of these measures, there have been accomplished 4.5 miles of stream channel stabilization and 103 acres of revegetation of sediment-producing area. Construction of structures, installation of land stabilization measures primarily for flood prevention, and establishment of land treatment measures which contribute to flood prevention, are on schedule.

Chippewa River tributaries, Minnesota.—The major flood prevention measures planned for this watershed are 5 floodwater-retarding structures, 14 stabilizing and sediment control structures, 25 miles of waterway improvement, and 85.2

miles of floodways. Because of its size and complexity, this project is still in the planning stage. Therefore, structural or other measures primarily for flood prevention have not yet been installed. The land treatment program of establishing practices which contribute to flood prevention is proceeding satisfactorily. Land-use adjustments have been made on 1,020 acres and 388 acres have been strip cropped.

East Willow Creek; Minn.—The major flood-prevention measures planned for this watershed are 12 floodwater-retarding structures, 41 stabilizing and sediment-control structures, 25 miles of waterway improvement, 3 miles of stream channel capacity improvement, and 5 miles of roadside erosion control. Five stabilizing and three floodwater-retarding structures are in the process of construction. Establishment of land-treatment measures which contribute to flood prevention is proceeding satisfactorily.

East Branch of South Fork of Blackwater Creek, Mo.—The major flood-prevention measures planned for this watershed are 34 stabilizing and sediment-control structures, 4.6 miles of waterway improvement and 7.7 miles of diversion ditches and dikes. Measures already installed include 5 grade stabilization and sediment-control structures and 3,250 feet of waterway improvement. Drought conditions for the past 3 years have hindered the establishment of vegetative practices. However, the following land-treatment measures which contribute to flood prevention have been applied: 6.6 miles of terraces, 6.9 miles of field diversions, 41.6 acres of terrace outlet and waterway construction, and 128 acres of pasture seeding.

Lost Creek, Mo.—The major flood-prevention measures planned for this watershed are 4 floodwater-retarding structures, 21 stabilizing and sediment-control structures, and 6.7 miles of waterway improvement. As of December 1 there had been installed 1 detention structure and 1 grade-stabilization structure. Drought conditions during the past 3 years have resulted in serious failures and delays in the establishment of all types of vegetative practices. However, the following land-treatment measures contributing to flood prevention have been applied: 388 acres of land-use adjustments, 2.5 miles of terraces, 6.1 acres of terrace outlets and waterway construction, and 200 acres of pasture seeding.

Muster Creek, Mont.—The following resolution was presented and approved at a joint meeting of the North Custer Soil Conservation District supervisors and the directors of the Kinsey Irrigation Co. held on April 23, 1954:

"*Resolved:* That activities of the Muster Creek watershed program be held in abeyance for a period of 1 year from this date in order to give the local interests additional time to work out a more satisfactory cost-sharing arrangement and also because of the possibility of the passage of more favorable legislation by Congress for the development of watersheds in the Western States within the next year."

The Service concurred in the delay to April 1, 1955.

Brownell Creek, Nebr.—The major flood prevention measures planned in this watershed are 4 floodwater-retarding structures and 67 stabilizing and sediment control structures. Measures completed to date include 1 floodwater-retarding structure and 3 grade-stabilizing structures. Although the installation of land treatment measures which contribute to flood prevention is progressing satisfactorily, the lack of such measures in some subwatersheds has forced a delay in immediate plans for installation of some structures. Land treatment measures installed to date include 4,494 acres of contour farming, 3.4 miles of diversion construction, 605 acres of pasture seeding, 380 miles of terracing, and 223 acres of waterway development.

Dry Creek, Nebr.—The major flood prevention measures planned for this watershed are 7 floodwater-retarding structures, 19 stabilizing and sediment control structures, and 1.25 miles of floodways. One grade-stabilization structure is under construction. Land treatment measures which contribute to flood prevention that have been applied include 1,326 acres of contour farming, 1,187 acres of crop residue management, and 69 miles of terracing.

Indian Creek, Nebr.—The major flood prevention measures planned for this watershed are 18 floodwater-retarding structures and 111 stabilizing and sediment control structures. Measures already installed include 2 floodwater-retarding structures and 5 grade-stabilizing structures. Three-tenths of a mile of waterway improvement is under construction. Land treatment measures which contribute to flood prevention are being installed at a generally satisfactory rate in the watershed as a whole. However, in some areas installation of structures is being retarded by lack of land treatment accomplishments.

Upper Salt-Swedeburg tributaries of Salt Creek, Nebr.—The major flood prevention measures planned for this watershed are 34 floodwater-retarding structures,

185 stabilizing and sediment-control structures, 1.6 miles of waterway improvement and 0.6 mile of stream channel improvement. Five floodwater-retarding structures, 9 grade-stabilizing structures and 1.6 miles of waterway improvement have been completed. Progress has been retarded in some areas because establishment of land treatment measures which contribute to flood prevention has been slow. Measures established as of December 1, 1954, include 7,976 acres of contour farming, 342 acres of pasture seeding, 312 miles of terracing, 520 acres of waterway development, and 7,320 acres of conservation crop rotation.

Baboosic Brook, N. H.—There are no structural control measures included in the Baboosic Brook watershed work plan. Application of land treatment measures which contribute to flood prevention is progressing satisfactorily. Conservation plans have been completed for 31 farms. In addition conservation plans have been started with another 84 owners. Private contributions for establishment of measures has exceeded planned figures.

Sandia Mountain tributaries, N. Mex.—Negotiations are still under way between the Santa Fe-Sandoval soil conservation district and other local interests regarding the raising of cost-sharing funds. Commitments of over $13,000 have been obtained in addition to the value of rights-of-way for the 2 floodwater-retarding structures planned. These constitute all of the structures planned on non-Federal lands in the project. Grass land management on the area is steadily improving.

Upper Hondo, N. Mex.—The major flood prevention measures planned for this watershed are 1 floodwater-retarding structure, 200 stabilizing and sediment-control structures, 32 debris basins, 16.9 miles of stream channel improvement and 1.3 miles of roadside erosion control. Forty-one stabilizing and sediment-control structures have been completed. Good progress is being made in accelerating the application of land treatment measures which contribute to flood prevention.

Pequest Creek, N. J.—The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 17.5 miles of stream channel improvement, and 4 miles of diversion ditches. Inability to obtain all essential easements continues to hold up starting any of this work. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Ball Creek, N. Y.—One floodwater-retarding structure is all that is planned for this project and it will be contracted for in the fiscal year 1955. Planned stream channel improvement work will be done during the 1956 fiscal year. Establishment of land treatment measures which contribute to flood prevention is slightly behind schedule.

Dean Creek, N. Y.—The 2 floodwater-retarding structures and 2.9 miles of stream channel improvement planned are under contract. One structure is 75 percent complete. Of the 11 debris dams that are to be constructed by local interests, 8 are complete and 3 are under construction. All these flood prevention measures should be completed during the fiscal year 1955. Farm planning in the watershed is on schedule and should be completed during the 1956 fiscal year. Though application of land treatment measures which contribute to flood prevention is lagging temporarily, it is expected to be on schedule soon.

Great Brook, N. Y.—A contract for the construction of the one floodwater retarding structure planned for this project will be let in the fiscal year 1955. Farm planning is ahead of schedule, and land treatment measures which contribute to flood prevention are practically on schedule. The low income of many landowners in the watershed has been a factor that has caused some delay in establishment of land treatment measures.

Little Hoosick, N. Y.—The major flood prevention measures planned for this watershed are 13.8 miles of channel capacity improvement and 6 debris basins. These measures are now in the planning stage. Some stream channel work will be contracted for in the fiscal year 1955. Though farm planning is approximately on schedule, application of some land treatment measures which contribute to the flood prevention has lagged temporarily.

Third Creek, N. C.—The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures, 6 miles of waterway improvement, 43 miles of channel capacity improvement, 4 miles of diversion ditches and dikes, 111 miles of roadside erosion control and revegetation of 1,079 acres of critical sediment producing area. One floodwater-retarding structure has been completed. The chief problem encountered to date has been the prolonged drought which has hindered the application of land treatment measures which contribute to flood prevention. However, 47 acres of trees and 54 acres of grasses and legumes have been planted on critical sediment-producing areas.

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Tongue River, N. Dak.—The major flood prevention measures planned for th watershed are 18 floodwater-retarding structures, 5 miles of waterway improv ment, 30 miles of stream channel capacity improvement and 31½ miles of floo way. None of these measures have been installed nor are any under construction However, 8.8 miles of channel improvement is to be contracted shortly. Progre in the project has been retarded by necessity for extensive investigations t determine the adequacy of foundation and fill soils for structures planned. Estab lishment of land treatment measures which contribute to flood prevention ha progressed satisfactorily. The watershed activity has increased noticeably th number of district cooperators which in turn will accelerate the application o land treatment measures.

Double Creek, Okla.—The major flood-prevention measures planned for th watershed are 6 floodwater-retarding structures. Two structures with a tot flood storage of 1,343 acre-feet have already been constructed. Bids have bee solicited for construction of structures with a total storage capacity of 1,824 acr feet. There is a very diversified program on this project of land treatmen measures which contribute to flood prevention. It includes cover crops, terrace diversion terraces, waterway development, pasture and range improvement, an farm ponds for range management. More than 50 percent of some of thes planned practices have already been established.

Rocky Fork—Clear Creek, Ohio.—The major flood prevention measures planne for this watershed are 19 stabilizing and sediment control structures, 27 miles o waterway improvement, 2.7 miles of diversion ditches and dikes, 3 miles of strea channel improvement, 2½ miles of roadside erosion control, and revegetation o 70 acres of critical sediment-producing area. Measures completed are 1.2 mile of subwatershed waterways, 0.9 mile of diversion ditches and 1.5 acres of critic area stabilization. Establishment of land treatment measures is approximatel 10 percent complete and progressing concurrently with installation of measure primarily for flood prevention.

Upper Hocking, Ohio.—The major flood prevention measures planned for thi watershed are 9 floodwater-retarding structures, 72 stabilizing and sediment con trol structures, 24.2 miles of waterway improvement, and 5.3 miles of strea channel improvement. Two floodwater-retarding structures, 1 stabilizing struc ture, and 0.2 mile of waterway improvement has been completed. Land treat ment measures which contribute to flood prevention are 30 percent complete and progressing on schedule. Progress on the project is on schedule to date however, the conservancy district which was to raise funds for the fiscal yea 1955 is unable to do so until 1956, due to legal phases of its organization. Thi threatens the timetable of the project.

Cory Creek, Pa.—There are no structural flood prevention measures planne for this watershed to date. As to land treatment measures which contribut to flood prevention, a total of 23 acres of revegetation and 19 acres of strip croppin has been completed and 16.8 miles of field diversions and 4.6 miles of waterway have been constructed.

Twelve Mile Creek, S. C.—The major flood prevention measures planned fo this watershed are 11 floodwater-retarding structures, 27 miles of stream channe improvement, revegetation of 4,170 acres of critical sediment-producing area 100 miles of roadside control, and 5 miles of diversion ditches and dikes. Th measures installed or which are under contract are 1 floodwater-retarding struc ture, 5 miles of stream channel clearance, and 72 acres of erosion control plantings Land treatment measures which contribute to flood prevention have so far bee established as planned. However, the recent drought, which was the most sever in many years, has reduced farmer interest considerably and has also drastically decreased the amount of money farmers will be able to spend for applying con servation practices.

Wolf River tributaries—Marys and Sand Creeks, Tenn.—The major flood pre vention measures planned for this watershed are 2 floodwater-retarding structures 5 miles of channel capacity improvement, 10 miles of roadside erosion control 25 stabilizing and sediment control structures, and revegetation of 121 acres o critical sediment-producing area. One floodwater-retarding structure and 4 desilting basins have been completed. Trees have been planted on 202 acres of critical areas and 82 acres of such land have been seeded to legumes. Of th total estimated vegetative measures which contribute to flood prevention needed in the project about 13 percent has been installed. The principal factor presently retarding development of the project is reduced farmer income resulting from 3 years of drought.

Calaveras Creek, Tex.—The major flood prevention measures planned for thi watershed are 10 floodwater-retarding structures. Three of these structures

have been completed and one is under construction. Progress on establishment of land treatment measures which contribute to flood prevention was slower than anticipated during the fiscal year 1954 due to drought. An active watershed group is now working in furthering planning and application of land treatment at an accelerated rate and good progress is being made.

Cow Bayou Creek, Tex.—The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures and 2.6 miles of stream channel improvement. Construction is now being completed on 1 floodwater-retarding structure and the awarding of a contract on another is in progress. Application of land treatment measures which contribute to flood prevention is behind schedule due to drought, but much better progress is now being made. The sponsoring groups are optimistic about accelerating establishment of these measures during this next year.

Escondido Creek, Tex.—The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures. Two of these structures have been completed, one is under construction, and another scheduled for completion in the fiscal year 1955. There are still easements to be cleared on several sites, but the local people feel that this can be accomplished and will not slow up scheduled construction. Establishment of land treatment measures that contribute to flood prevention was less than anticipated during the fiscal year 1954 due to drought.

Green Creek, Tex.—The major-flood prevention measures planned for this watershed are 13 floodwater-retarding structures. One structure has been completed, one is under construction, and bids have been solicited for construction of another. Easements have been cleared on all structure sites in the watershed and the local leaders are now actively engaged in expediting the establishment of land treatment measures which contribute to flood prevention. Progress on installation of such measures has been slower than originally scheduled due to drought.

Pleasant Creek, Utah.—The major flood-prevention measures planned for this watershed are 15 stabilizing and sediment control structures, 6.5 miles of channel improvement, 11.6 miles of roadside erosion control, and stabilization of 100 acres of critical runoff and sediment-producing area. Good progress has been made in the installation of both those measures that are primarily for flood prevention and the land treatment measures which contribute to flood prevention. Measures installed include 2,300 lineal feet of ditch relocation, 1 flood spreading structure containing 12,585 cubic yards of earth and rock fill, 3 debris basins, and 9 erosion control structures. Proper land use has been planned for 3,689 acres.

Santaquin, Utah.—The major flood-prevention measures planned for this watershed are one desilting and debris basin, 1.2 miles of stream channel improvement, and 1 mile of floodway. The debris basin structure which contains 107,921 cubic yards of fill material is 90 percent completed. No land treatment measures which contribute to flood prevention have been installed to date, but preliminary work leading to signing of agreements with landowners in the watershed has been completed.

East Fork of Falling River, Va.—The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 15 miles of stream channel improvement, 4.4 miles of waterway improvement, 41 miles of roadbank stabilization, and stabilization of 522 acres of critical runoff and sediment-producing area. Measures installed include 0.5 miles of waterway improvement, 12 miles of roadbank stabilization, and stabilization of 61 acres of critical sediment-producing area. A total of 1.2 miles of critical area is also being fenced. Progress in establishment of land treatment measures which contribute to flood prevention is behind schedule at this time. The normal application rate of vegetative practices was reduced due to extreme drought conditions in the fall of 1954.

Mission Creek, Wash.—The major flood prevention measure planned for this watershed is 6 miles of stream channel improvement. A total of 1,540 cubic yards of rock riprap has been placed for streambank stabilization and 4,826 cubic yards of material has been moved for channel capacity improvement. Application of land treatment measures which contribute to flood prevention is progressing satisfactorily. Development of the project as planned is being delayed beacuse local sponsors have not yet completed the organization of a legal State subdivision organization capable of securing the necessary local share of project costs.

Salem Fork, W. Va.—The major flood prevention measures planned for this watershed are 8 floodwater-retarding structures and 2 miles of stream channel improvement. Two floodwater-retarding structures have been completed. A city water supply structure, having floodwater-retarding features, is under construc-

tion in the project wholly without use of Federal funds. Land treatment measures which contribute to flood prevention are being applied at the scheduled rate. No major problems are hindering the project development at the present time. However, securing of easements and rights-of-way for structures may be a deterrent in the 1955 calendar year.

West Fork of Kickapoo, Wis.—The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 16 stabilizing and sediment control structures, and 10 miles of waterway improvement. Two floodwater-retarding structures are under construction. Bad weather has caused some construction delay. The contractors' time started July 7 and the job was shut down for the winter on November 12. During this time there were 45 days on which it was not possible to work because of abnormal rainfall and subsequent wet conditions. Application of land treatment measures which contribute to flood prevention has been completed on approximately 60 percent of the cropland and 13 percent of the pasture land.

INSTALLATION ACTIVITIES OF THE FOREST SERVICE

The Forest Service is responsible for the forestry phases of the watershed protection program. For work on State and private lands, the Forest Service in most States works through the State forestry agency. Also, although the pilot demonstration program was initiated at a time when most State forestry agencies were not prepared to assume additional financial responsibilities, they have responded wholeheartedly in the initial program participation. For example, some States have assumed almost all of the public share of the tree planting costs, while others are cooperating according to existing patterns of State-Federal cooperation. Certain other States, unable to participate until their legislatures provide additional funds, are nonetheless cooperating to the extent possible, or functioning as the Federal Government's agent until they can assume greater responsibility in the program.

The Forest Service either directly or through the State forestry agency is concerned with the forestry aspects of works of improvement in 42 of the 60 watersheds. Work plans including these forestry improvements have been prepared on these 42 watersheds and the work is under way on 18.

The following are examples of work the Forest Service is doing in cooperation with State and local interests in these pilot demonstration watersheds in which works of improvement have been installed:

Pequest watershed, New Jersey.—Negotiations necessary to undertake cooperative work on the privately owned forest lands were completed and field work started in April 1954. Sixty-one owners of 2,500 acres of forest land were assisted in forest management to improve the hydrologic and economic condition of their properties. Detailed management plans were prepared for 32 individual owners of 2,200 acres. One forest area of 190 acres (203,000 board feet of merchantable timber) was marked for cutting under sound watershed management principles. Technical guidance was provided to 15 owners in planting trees on 37 acres of cropland to be converted to forest use. Several owners were given technical assistance in stabilizing soil and retarding runoff on old logging roads and skid trails.

Sandia Mountain tributaries, New Mexico.—Field work was started in February 1954. Critical sediment source areas were fenced to exclude livestock, and most of the land treatment work scheduled for installation in 1954 was completed. This included construction of stabilizing and sediment control structures, slope terracing, planting and seeding of grass species in eroding areas. A limited amount of terracing on steep, eroding slopes was completed.

Sands and Mary's Creeks, Tenn.—About 300,000 trees were planted on 271 acres of critically gullied farmland which was contributing significant amounts of sediment and flood runoff. An additional 110 acres of badly eroding farmland was prepared for planting by the construction of 1,300 brush dams designed to temporarily stabilize gully cutting. Cooperative forest fire control was extended to the watershed by the State forester who had installed 2 fire lookout towers, 2 fire crew dormitories, 1 permanent radio installation, 2 fire equipment trucks, and fire-fighting tools. Local volunteers served as fire crew and foreman.

Pleasant Creek, Utah.—Work on the national forest lands of this project was started in September 1953, but was closed down by snow in mid-October which did not permit resumption of work until mid-June 1954. In this relatively short time the following work was accomplished on critically eroding mountain land: (1) Contour trenching, 70 acres; (2) reseeding, 140 acres; (3) preparation of

additional land for seeding, 80 acres; (4) constructed 5 miles of range fence and installed 4 cattle guards to exclude livestock from newly seeded areas; (5) installed erosion control measures on 6 miles of road.

Mr. MARSHALL. Do you have any further general statement on this item?

Mr. WILLIAMS. Mr. Chairman, I believe we covered that in the opening remarks earlier in the hearing. Mr. Peterson may have some further remarks, though.

Mr. PETERSON. No further general statement, Mr. Chairman.

ESTABLISHMENT OF PILOT WATERSHED PROGRAM

Mr. MARSHALL. Will you discuss for us the developments under the pilot program which was started 2 years ago under Public Law 48 of the 74th Congress? That was the basic act, was it not, for watershed protection?

Mr. WILLIAMS. Yes, sir.

Mr. Chairman, you will recall that it was at the instigation of this particular committee that 2 years ago the initial sum of $5 million was appropriated for the purpose of launching a pilot watershed program and that program got under way shortly after the funds were appropriated. The watersheds that were approved, pilot watersheds, were made a matter of record with this committee and with the committee in the Senate. Some 60 watersheds were set up and work plans were developed on those watersheds with the local people. First, a preliminary estimate was made. Then, following further discussions with the local interested agencies, groups of farmers and so forth, the final work plans were prepared.

Page 231 of the notes has a list of all the pilot watersheds selected for installation of measures under this program. It indicates the name of the watershed, the State in which it is located, county and the estimated total Federal cost. On page 233, the summation indicates that the present estimated Federal cost is $29,408,688. The work on these projects, most of them, has been proceeding in a very satisfactory manner.

ACCELERATION OF PILOT WATERSHED PROGRAM

Mr. ANDERSEN. May I interject there, Mr. Chairman. I would like to compliment the Department and Soil Conservation Service for the splendid manner in which they have handled this particular pilot plant watershed protection program. It is, as Mr. Williams has just stated, being brought into a very successful stage of development. The only question in my mind, Mr. Williams, is this: I have information to the effect that a good many of these are ready to go and contracts are ready to be let provided more money were available than requested in this particular budget.

I notice that you intend to request an additional $6 million for fiscal 1957 and another final increment in 1958. Would it not be good business to accelerate this program as long as your plans are in such condition as to permit such acceleration?

Mr. WILLIAMS. Mr. Andersen, I would not recommend that it be accelerated faster than local interests are ready to go ahead.

Mr. ANDERSEN. I agree absolutely with you. Let me state as a further premise, I feel that the new general watershed program is slower in starting, and necessarily so, and it would seem to me that we could benefit, perhaps, by accentuating at least for this coming year

the pilot plan project at the expense, you might say, of some of the funds that you are asking for the general watershed protection program. I doubt, personally, in view of the many problems you have to decide with the various States, in relation to the basic law passed just last year, that you can proceed quite as rapidly as you did on the other. Am I correct in that, Mr. Williams?

Mr. WILLIAMS. There are probably going to be many delays. A number of the States have had to reconsider their State enabling legislation. For example, in your State of Minnesota right now the State legislature is giving consideration to some modification of State legislation which will facilitate this watershed protection activity. It is pretty hard to predict just how rapidly these projects under 566 can come into being.

Mr. ANDERSEN. May I ask you at this point, how much are you asking for 566 here in this budget?

Mr. WILLIAMS. We are asking for a total of $11 million of which $6 million would be for the pilot projects.

Mr. ANDERSEN. That leaves $5 million for the regular watershed protection? I certainly agree with your statement to the effect that we have to go slow where slowness is warranted and especially in relation to this general program. But I still think that in view of contracts which are ready to be placed into operation provided that the money was available, that we would justify transferring, say, a million or a million and a half dollars now asked for in the general program to the pilot-plant program in order to bring the latter to a more early conclusion. I say that after studying several projects and I am hoping that perhaps we could finish the pilot-plant program in 4 years rather than to have it go the full 5 years.

Mr. WILLIAMS. As you know, Mr. Andersen, the 5-year program assumes certain rates of expenditure. It assumes the peak rate of expense would be about the third year. It is very difficult to predict exactly how they are going to go. I believe we need some flexibility in order to enable us to proceed with contracting where the local interests are ready to proceed. Within the $11 million budget assuming that were the figure if it would be agreeable with the committee it may be advantageous to exceed $6 million for pilot watersheds provided the other watersheds come slower. I think that might be a possibility.

Mr. ANDERSEN. Am I to understand that you could, if the Department decides to do so, accelerate the pilot-plant project at the expense of the other, providing conditions justify it?

Mr. WHEELER. Yes, we could. Actually, it is a single appropriation. So there would be complete flexibility within the $11 million. It is our present estimate that $5 million will be used for the new watersheds and $6 million for the pilot watersheds. It has been our custom, particularly under the flood prevention item, to consult with the committee as we go along if we find it necessary to deviate significantly from our budget plan. But, as far as the legal situation is concerned, the estimate is for $11 million for both purposes.

Mr. ANDERSEN. You have dispelled from my mind any doubts which I might have had through your answer and I want to again express my appreciation to the Department and to the Soil Conservation Service especially, for the splendid job which I feel they are doing in this great program which has taken hold throughout the Nation.

Thank you, Mr. Chairman.

LOCAL CONTRIBUTIONS TO WATERSHED PROGRAMS

Mr. MARSHALL. What has been your experience with local cooperation; local organizations are to put up 50 percent of the funds, are they not?

Mr. WILLIAMS. We set that as a goal, Mr. Chairman, for achieving in terms of the total program, that we should try to obtain at least 50 percent of the cost of the project from non-Federal interests. Actually, our records to date show that we have done a little bit better than that. We beat it about 2 percent to date. That makes us feel quite encouraged about the willingness of local people under Public Law 566 to appropriately share the cost of these projects on the partnership approach. So we are quite happy, Mr. Marshall, that it has worked out that way. Mr. Brown might like to comment further on the cost-sharing angle.

Mr. BROWN. Mr. Chairman, in round figures, our latest tabulation of the expected total cost of the program would be a Federal cost of $29 million, a local public cost of $8 million, a local private cost of $26 million, representing a total non-Federal cost of $34 million and a total program cost of $63 million, all in round figures. It shows that the total non-Federal has exceeded the total Federal by about $5 million.

Mr. ANDERSEN. I would say, Mr. Chairman, that that was entirely within the intent of the Congress when the act was passed, would you not?

Mr. MARSHALL. Yes; I am positive of that.

EFFECT OF WATERSHED PROJECTS ON WATER TABLES

Mr. VURSELL. The question that I would like to ask is: Will this retaining the water where it falls, which is one of the purposes of this watershed thing, in addition to depositing less silt and eroding the soil, is it supposed to raise the water table in the localities of these operations?

Mr. WILLIAMS. Yes, sir, Mr. Vursell. In many geologic formations that result would be obtained. There are some types of geologic formations wherein the rock strata would probably preclude in-soak into the soil mantle from going into the ground water table. The excess moisture in the soil mantle that is not needed for plant growth, or that does not transpire or evaporate from that soil mantle, is available for feed by gravity into the ground water table. Probably the cumulative effect over a period of years would be very substantial because the amounts of water that are running off the surface now in humid areas of the country such as yours, Mr. Vursell, are terrific in relation to the amount that is going into the ground. In some parts of the country there have been some special projects set up for deliberately spreading runoff water on the soil to contribute to the ground water table.

A good bit of research has been done on that in certain sections of California, for example. There, runoff water is spread into small basins and where it can filter into the ground water table. We are sure of this: That it will have the general effect of adding to ground water, but determining the quantitative effect of how much in a given situation is quite a problem.

Mr. VURSELL. The reason I asked that question, I know where they are working on a watershed like this and have been for several years. One of the most responsible farmers I know told me that after they got to working on this and got it into effect, that a well on his farm that used to always have plenty of water, when the water table had fallen before they started with this work, ran out, and since going along with this for quite some time, that during the great drought we have had in southern Illinois for the past 2 years, that in that particular area, his well was back in fine shape with plenty of water. That was the reason I asked the question because it means a good deal down in my area of the State, southern Illinois.

EFFECT OF WATERSHED PROJECTS ON FLOODS

Another question I would like to ask which I have an idea on and perhaps you could confirm it or destroy my notion: Do you feel that when this envelops the country, as I believe it finally in time will, as suggested by the gentlemen from Minnesota and others on the committee, do you feel that it will probably help to mitigate the great floods that we have had and probably be an asset to the Federal Government in saving it some money in the big flood-control projects, dikes, and levees that we may build in the future?

Mr. WILLIAMS. Yes; I do feel that it will have that effect in some degree. I do not think that we can anticipate that it will eliminate the need for major dams and levees for downstream areas. Certainly, I would not anticipate that, but in a given watershed situation it may alter the size of the storage that is needed or will lengthen the life of storage reservoirs.

Mr. VURSELL. My thought was that probably some of the money that the Federal Government puts into this watershed thing would be, maybe completely, offset or more than offset in 10 or 12 years from now in having to spend less money, as you say, while it would not cure the proposition, that we might well be saving all of this money by the reduction of expenses for major flood-control projects later on.

Mr. WILLIAMS. I think that will be the situation in many places.

Mr. VURSELL. Mr. Chairman, I would like to further add that I had a meeting with SCS people a couple of months ago encompassing most of southern Illinois. They were very much interested in this watershed program and they are very encouraged with it and they are rather optimistic and they have complimented the Congress in its forward looking and aggressive step that it has made.

I am sure it will be of great interest to the people of my State.

Mr. WILLIAMS. I know there are many opportunities in southern Illinois, Mr. Vursell, for this program.

BREAKDOWN OF WATERSHED BUDGET FOR 1956

Mr. MARSHALL. How much of the additional $5 million requested for 1956 will be used for planning and how much for installation of structures and other works of improvement?

Mr. WILLIAMS. Mr. Chairman, the breakdown as between planning work and works of improvement and program assistance with other agencies is as follows: Planning, $1,923,300; works of improvement,

$8,689,200; program assistance by other agencies which refers to the Geologic Survey, the Weather Bureau, and the Agricultural Research Service, amounts to $387,500. That totals the $11 million total for the watershed-protection item.

Mr. MARSHALL. How much will you transfer to Agricultural Research Service for the hydrologic work?

Mr. WILLIAMS. To the Agricultural Research Service, it is proposed to transfer $100,000 which is for economic evaluations of the watershed projects. That $100,000 is not for economic research or research per se. I believe that the Agricultural Research Service has requested in its own budget for research an item for hydrologic research, so this $100,000 that is provided for here is purely for services to be rendered by ARS in the economic field.

PASSENGER MOTOR VEHICLES

Mr. MARSHALL. You state you have need for replacement of 25 cars. How were these acquired in the first place?

Mr. DORNY. Some of our automobiles were transferred from the soil conservation operations program. We reduced the fleet there and we are trying to replace some of the older cars now. It would be a replacement basis and no increase in the fleet is contemplated.

STATUS OF ACTIVITIES UNDER PUBLIC LAW 566

Mr. DEANE. I have in my district the Pee Dee watershed which was approved by Congress in Public Law 395 of the 82d Congress, along with some 10 of 11 watersheds approved for other areas of the country. I understand that it was considered by the Public Works Committee of the House, which refused to act because it consisted of about 90 percent soil management and only 10 percent flood control. I believe that committee felt that it should be held for action under legislation which would establish a soil conservation type of watershed program. Now that such legislation has been passed, I would like to know how much has been spent on this and similar projects, indicating names and States, the length of time involved in their development, what plans you have for each project, and what priority you attach to each.

Mr. WILLIAMS. We will be glad to place a reply to that in the record.

(The following information was supplied later:)

STATUS OF ACTIVITIES UNDER PUBLIC LAW 566, THE WATERSHED PROTECTION AND FLOOD PREVENTION ACT AS OF FEBRUARY 21, 1955

Two hundred and sixty applications for assistance under the authority of Public Law 566, have been submitted to the Administrator, Soil Conservation Service, by local organizations in 27 States. Each application has been approved within the State by the governor or the State agency having supervisory responsibility over watershed programs.

Thirty-eight watershed applications in twenty States had been approved by the Administrator, Soil Conservation Service, for making the necessary surveys and investigations for watershed work plan development. The first watershed approvals for planning under the authority of this act were made on January 25, 1955. Priority for planning approvals within each State was based on the recommendations of the supervisory State agency and the State conservationist of the Soil Conservation Service.

The approved applications cover the following watersheds:

State	Watershed	Area (acres)	Counties
California	Arroyo Grande	97,180	San Luis Obispo.
	Smith Creek	14,000	Riverside.
	Upper Chino Basin	175,000	San Bernardino, Rivers
Colorado	Monument-Fountain	230,400	El Paso, Teller.
Delaware	Bear Hole	4,700	Sussex.
Georgia	Bear Creek	22,000	Newton, Jasper.
	Little Creek	17,800	Wheeler, Laurens.
Idaho	Cold Springs	49,800	Elmore.
Indiana	Busseron Creek	140,800	Sullivan, Vigo, Cl Green.
	Elk Creek	17,100	Washington.
Iowa	Chippewa Creek	1,075	Wapello.
	Harmony Creek	3,100	Harrison.
Kentucky	Canoe Creek	85,000	Henderson.
	Twin Creek	19,000	Harrison.
	Cypress Creek	48,000	Union.
	Mudd River	237,700	Butler, Muhlenber Logan, Todd.
Louisiana	Bayou Dupont	57,638	Natchitoches and Sab Parishes.
Maryland	Little Deer Creek	10,112	Harford.
Nebraska	Plattsmouth	3,000	Cass.
	Wild Horse	28,200	Morrill.
Nevada	Susie Creek	170,000	Elko.
New Mexico	Hatch Valley Arroyos	22,510	Dona Ana.
Oklahoma	Long Branch	25,000	Garfield, Payne an Noble.
	Big Wewoka Creek	172,525	Seminole, Hughes, P tawatomie.
	Little Wewoka Creek	122,445	Seminole, Hughes, Okf kee.
Oregon	Deer Creek	60,800	Josephine.
South Carolina	Coneross	32,000	Oconee.
	Bush River	78,000	Laurens, Newberry.
South Dakota	South Branch Green	4,260	Union.
	Oakland Watershed	1,800	Lincoln.
Texas	Upper Brushy	186,240	Williamson, Milam.
	Lower Brushy	132,480	Do.
	Cummings	204,896	Lee, Fayette, Austin, a Colorado.
	Auds	38,460	Lamar.
Utah	Mill Canyon and Sage flat	15,032	Sevier.
	Chalk Creek	36,000	Millard.
West Virginia	Upper Buffalo	46,376	Marion.
	Upper Graves	4,920	Marshall.

The surveys and investigations on the above watersheds are now in progres and it is estimated that 3 to 4 months will be required on the average-sized wate shed to assemble sufficient data to initiate the development of a watershed wor plan by the local organization. Technical assistance in the preparation of th work plan will be provided to the local organization by the Soil Conservation Serv ice and the Forest Service.

One million seven hundred and fifty thousand dollars was appropriated in th 1955 agriculture supplemental appropriation bill for initiating activities under thi authority. Most of the amount will be expended during the current fiscal year t organize, train, and operate 22 work-plan parties throughout the country who are providing technical planning assistance to the local organizations.

The budget request for 1956 fiscal year includes $5 million for completing plan- ning and initiating works of improvement on the currently approved watersheds and initiating similar activities on new watersheds.

The Soil Conservation Service has information that two watershed applications are now being processed in the State of North Carolina. They are for the Abbotts Creek in the upper Pee Dee watershed and Bear Creek in Wayne, Greene, and Lenoir Counties. These applications have not as yet been submitted to the Administrator, Soil Conservation Service, but it is understood they will be con- sidered by the State soil-conservation committee at their next meeting and sub- mitted immediately, if approved as required by the act.

The Agriculture Appropriation Act of 1954 authorized the Department of Agriculture to provide technical and financial assistance on about 60 specified small watersheds in order to demonstrate the effectiveness of watershed programs for flood prevention and to evaluate the ability of local people to share in the costs of installing watershed programs. Third Creek in the Pee Dee watershed in

Rowan, Iredell, and Alexander Counties is 1 of these 60 authorized demonstration watersheds. The proposed program on this 66,000-acre watershed includes complete land treatment with soil- and water-conservation practices, 11 flood water-retarding structures, 43 miles of channel improvement, and 4 miles of diversion ditches and dikes. The total Federal cost of the program, which is to be installed in 5 years is approximately $500,000 with the local people contributing approximately a like amount. About $88,000 in watershed-protection funds were obligated in the fiscal year 1954 and a like amount is available for this fiscal year. Prolonged drought during 1954 delayed installation in this project; however, 1 floodwater-retarding structure was completed and 47 acres of trees and 54 acres of grasses and legumes were planted on critical sediment-producing acres.

Information previously gathered in the course of the flood-control survey of the Pee Dee watershed under the authority of the flood-control acts has been used in planning the work now underway on Third Creek and will be used in connection with planning work on Abbotts Creek after an application for this has been received and approved by the Administrator of the Soil Conservation Service. These are smaller watersheds within the larger area of the Pee Dee.

Flood Prevention

Amounts available for obligation

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$7,000,000	$7,482,000	$8,700,000
Unobligated balance brought forward	1,096,380	2,039,674	
Recovery of prior year obligations	4,473		
Reimbursements from non-Federal sources	13,557	2,900	4,400
Reimbursements from other accounts	21,471	11,136	23,000
Total available for obligation	8,135,881	9,535,710	8,727,400
Unobligated balance carried forward	−2,039,674		
Obligations incurred	6,096,207	9,535,710	8,727,400
Comparative transfer from—			
"Conservation operations, Soil Conservation Service":			
Direct appropriation	1,443,381	1,513,292	
Reimbursements from non-Federal sources	3,449	200	
Reimbursements from other accounts	7,638	12,425	
"Salaries and expenses, Forest Service"	272,972	200,000	
"Forest roads and trails, Forest Service"	69,538		
Comparative transfer to "Salaries and expenses, Office of the Solicitor, Agriculture"	−18,000		
Total obligations	7,875,185	11,261,627	8,727,400

Note.—Reimbursements from non-Federal sources above are from proceeds of sales of personal property (40 U. S. C. 481 (c)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
1. Preliminary examinations and surveys	$425,382	$315,354	
2. Works of improvement	7,235,094	10,596,514	$8,700,000
3. General basin investigations in the Arkansas-White-Red River and New England-New York areas	168,954	323,098	
4. Obligations under reimbursements from non-Federal sources	17,006	3,100	4,400
Total direct obligations	7,846,076	11,238,066	8,704,400
Obligations Payable Out of Reimbursements From Other Accounts			
1. Preliminary examinations and surveys	20,577		
2. Works of improvement	8,532	23,561	23,000
Total obligations payable out of reimbursements from other accounts	29,109	23,561	23,000
Total obligations	7,875,185	11,261,627	8,727,400

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
SOIL CONSERVATION SERVICE			
Summary of Personal Services			
Total number of permanent positions	664	650	
Full-time equivalent of all other positions	112	134	
Average number of all employees	681	765	
Number of employees at end of year	526	840	
Average salaries and grades:			
General schedule grades:			
Average salary	$4,481	$4,426	
Average grade	GS–6.4	GS–6.4	
Personal service obligations:			
Permanent positions	$2,523,249	$2,814,633	
Positions other than permanent	282,736	330,749	
Regular pay in excess of 52-week base	9,781	11,221	
Payment above basic rates	12,203	19,433	
Total personal service obligations	2,827,969	3,176,036	
Direct Obligations			
01 Personal services	2,820,396	3,175,900	
02 Travel	122,102	141,000	
03 Transportation of things	31,562	24,800	
04 Communication services	30,735	31,300	
05 Rents and utility services	50,251	77,700	
06 Printing and reproduction	23,769	38,000	
07 Other contractual services	2,752,703	5,770,639	
Services performed by other agencies	33,900	68,000	
08 Supplies and materials	359,781	425,300	
09 Equipment	231,982	83,400	
13 Refunds, awards, and indemnities	372		
15 Taxes and assessments	7,217	10,300	
Subtotal	6,464,770	9,846,339	
Deduct charges for quarters and subsistence	105		
Total direct obligations	6,464,665	9,846,339	
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	7,573	136	
07 Other contractual services	4,739	7,702	
08 Supplies and materials	2,319	3,031	
09 Equipment	580	1,692	
Total obligations payable out of reimbursements from other accounts	15,211	12,561	
Total obligations	6,479,876	9,858,900	
ALLOTMENT TO FOREST SERVICE			
Summary of Personal Services			
Total number of permanent positions	126	107	
Full-time equivalent of all other positions	139	150	
Average number of all employees	257	261	
Number of employees at end of year	142	137	
Average salaries and grades:			
General schedule grades:			
Average salary	$4,934	$4,680	
Average grade	GS–7.1	GS–6.6	
Ungraded positions: Average salary	$3,679	$3,626	
Personal service obligations:			
Permanent positions	$514,425	$471,429	
Positions other than permanent	287,975	318,041	
Regular pay in excess of 52-week base	1,979	1,805	
Payment above basic rates	21,817	1,645	
Total personal service obligations	826,196	702,920	

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOTMENT TO FOREST SERVICE—continued			
Direct Obligations			
01 Personal services	$814,606	$788,720	$573,730
02 Travel	26,460	29,215	15,600
03 Transportation of things	3,049	3,500	2,100
04 Communication services	5,484	5,965	4,000
05 Rents and utility services	8,404	8,325	6,400
06 Printing and reproduction	124	100	100
07 Other contractual services	157,829	171,633	138,119
Services performed by other agencies	1,381		
08 Supplies and materials	261,686	319,541	237,291
09 Equipment	22,878	18,180	15,000
11 Grants, subsidies, and contributions	13,162	17,172	13,000
13 Refunds, awards, and indemnities	25		
15 Taxes and assessments	4,730	4,911	3,900
Subtotal	1,319,818	1,362,262	1,009,240
Deduct charges for quarters and subsistence	1,443	1,240	1,240
Total direct obligations	1,318,375	1,361,022	1,008,000
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	11,590	9,200	9,200
02 Travel	1,637	1,300	1,300
03 Transportation of things	589	500	500
08 Supplies and materials	75		
15 Taxes and assessments	7		
Total obligations payable out of reimbursements from other accounts	13,898	11,000	11,000
Total obligations	1,332,273	1,372,022	1,019,000
ALLOTMENT TO FARMERS' HOME ADMINISTRATION			
Number of employees at end of year			
01 Personal services: Permanent positions (total obligations)	1,484		
ALLOTMENT TO AGRICULTURAL RESEARCH SERVICE			
Total number of permanent positions	11	3	
Average number of all employees	9	4	
Number of employees at end of year	7	3	
Average salaries and grades:			
General schedule grades:			
Average salary	$6,090	$6,485	
Average grade	GS–9.2	GS–9.3	
01 Personal services:			
Permanent positions	$58,504	$27,244	
Positions other than permanent	286		
Regular pay in excess of 52-week base	363	78	
Total personal services	59,153	27,322	
02 Travel	2,364	1,700	
06 Printing and reproduction	3		
07 Other contractual services	4		
Services performed by other agencies		1,650	
15 Taxes and assessments	28	33	
Total obligations	61,552	30,705	
SUMMARY			
Summary of Personal Services			
Total number of permanent positions	801	760	702
Full-time equivalent of all other positions	251	284	184
Average number of all employees	947	1,030	880
Number of employees at end of year	675	980	955
Average salaries and grades:			
General schedule grades:			
Average salary	$4,560	$4,458	$4,445
Average grade	GS–6.5	GS–6.4	GS–6.3

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
SUMMARY—continued			
Summary of Personal Services—Continued			
Personal service obligations:			
Permanent positions	$3,097,662	$3,313,306	$3,054,57
Positions other than permanent	570,997	648,790	431,11
Regular pay in excess of 52-week base	12,123	13,104	12,30
Payment above basic rates	34,020	21,078	19,62
Total personal service obligations	3,714,802	3,996,278	3,517,59
Direct Obligations			
01 Personal services	3,695,639	3,986,942	3,508,72
02 Travel	150,926	171,915	145,00
03 Transportation of things	34,611	28,300	23,10
04 Communication services	36,219	37,265	34,00
05 Rents and utility services	58,655	86,025	81,40
06 Printing and reproduction	23,896	38,100	16,90
07 Other contractual services	2,910,536	5,942,272	4,032,81
Services performed by other agencies	35,281	69,650	65,00
08 Supplies and materials	621,467	744,841	639,39
09 Equipment	254,860	101,580	133,00
11 Grants, subsidies, and contributions	13,162	17,172	13,00
13 Refunds, awards, and indemnities	397		
15 Taxes and assessments	11,975	15,244	12,70
Subtotal	7,847,624	11,239,306	8,705,64
Deduct charges for quarters and subsistence	1,548	1,240	1,24
Total direct obligations	7,846,076	11,238,066	8,704,40
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	19,163	9,336	9,20
02 Travel	1,637	1,300	1,30
03 Transportation of things	589	500	50
07 Other contractual services	4,739	7,702	7,47
08 Supplies and materials	2,394	3,031	2,93
09 Equipment	580	1,692	1,60
15 Taxes and assessments	7		
Total obligations payable out of reimbursements from other accounts	29,109	23,561	23,00
Total obligations	7,875,185	11,261,627	8,727,40

Analysis of expenditures

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$2,689,614	$2,104,874	$2,826,54
Obligations incurred during the year	6,096,207	9,535,710	8,727,40
	8,785,821	11,640,584	11,553,94
Adjustment in obligations of prior years	−4,473		
Reimbursements	−35,028	−14,036	−27,40
Obligated balance carried forward	−2,104,874	−2,826,548	−3,086,54
Total expenditures	6,641,446	8,800,000	8,44,000
Expenditures are distributed as follows:			
Out of current authorizations	6,641,446	4,800,000	5,700,00
Out of prior authorizations		4,000,000	2,740,00

Mr. MARSHALL. We will proceed to flood prevention now. Without objection, we will insert in the record, pages 251 and 252, the table following page 252, and pages 256 to 263 of the justifications. (The pages referred to are as follows:)

Flood prevention

Appropriation, 1955	$7,482,000
Activities transferred in 1956 estimates for additional measures to accelerate flood prevention from:	
"Conservation operations, Soil Conservation Service"	1,513,292
"Salaries and expenses, Forest Service"	200,000
Base for 1956	9,195,292
Budget estimate, 1956	8,700,000
Decrease	−495,292

Summary of decreases, 1956

Decrease due to completion of survey work	−$177,500
Decrease due to rounding off the estimate for works of improvement	−17,792
Decrease due to completion of the general basin investigations work in the Arkansas-White-Red River and the New England-New York areas	−300,000

Project statement

Project	1954	1955 (estimate)	Decreases	1956 (estimate)
(a) Preliminary examinations and surveys	$425,538	$177,500	−$177,500	
(b) Works of improvement	7,233,936	8,717,792	−17,792	$8,700,000
(c) General basin investigations	168,594	300,000	−300,000	
Total	7,828,068	[1] 9,195,292	−495,292	8,700,000
1954 appropriation available in 1955	939,823			
Transfer in 1955 estimates from "Forest roads and trails, Forest Service"	−69,538			
Transfer in 1955 estimates to "Salaries and expenses, Office of the Solicitor, Agriculture"	+18,000			
Transfer in 1956 estimates from:				
"Conservation operations, Soil Conservation Service"	−1,443,381	−1,513,292		
"Salaries and expenses, Forest Service"	−272,972	−200,000		
Total appropriation	7,000,000	7,482,000		

[1] In addition, the following unobligated balances from prior year are available:

	1955
(a) Preliminary examinations and surveys	$138,147
(b) Works of improvement	1,879,431
(c) General basin investigations	23,098
Total	2,040,676

Flood prevention—Works of improvement, funds available 1955, and proposed appropriation 1956

Watershed	1955										1956 budget estimate (new appropriation in addition, prior year balances available)
	On basis of funds available							On basis of funds appropriated in 1955			
	Appropriated under "Flood prevention"	Balances carried forward from 1953	Balances carried forward from 1954	Program adjustments	Total available under "Flood prevention" (cols. 2, 3, 4, and 5)	Transfers in estimates for land-treatment measures	Total available (col. 6+ col. 7)	Appropriated under "Flood prevention"	Transfers in estimates for land-treatment measures	Total appropriated (col. 9+ col. 10)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buffalo Creek, N. Y.	$285,499	$26,667	$97,052		$409,218	$52,133	$461,351	$285,499	$52,133	$337,632	$325,420
Colorado (Middle), Tex.	352,831	17,223	33,335	[1] +$48,505	451,894	44,173	496,067	352,831	44,173	397,004	488,835
Coosa, Ga.	228,725	69,560	4,950		303,235	73,235	376,470	228,725	73,235	301,960	334,169
Little Sioux, Iowa	824,780	119,365	45,500		989,645	56,344	1,045,989	824,780	56,344	881,124	805,811
Little Tallahatchie, Miss.	580,647	173,554	191,177		945,378	148,426	1,093,804	580,647	148,426	729,073	798,021
Los Angeles, Calif.	566,836	166,770	81,076		814,682	150,000	964,682	566,836	150,000	716,836	824,487
Potomac, Md., Pa., Va., W. Va.	189,692	6,981	27,311		223,984	72,490	296,474	189,692	72,490	262,182	243,086
Santa Ynez, Calif.		98,505	25,153	[1] −48,505	75,153	50,000	125,153		50,000	50,000	50,000
Trinity, Tex.	1,552,000	114,158	89,509		1,755,667	605,022	2,360,689	1,552,000	605,022	2,157,022	2,060,870
Washita, Okla.	1,505,843	1,245	214,961		1,722,049	173,645	1,895,694	1,505,843	173,645	1,679,488	1,493,787
Yazoo, Miss.	917,647	239,727	35,652		1,193,026	287,824	1,480,850	917,647	287,824	1,205,471	1,275,514
Total	[2] 7,004,500	1,033,755	845,676		[2] 8,883,931	1,713,292	[2] 10,597,223	[2] 7,004,500	1,713,292	[2] 8,717,792	[2] 8,700,000

[1] Previously planned gully stabilization work and related measures on the lower part of the Santa Ynez watershed will not be feasible in the fiscal year 1955 because local cooperators are not prepared to proceed with the work and provide the necessary cooperation at this time. Therefore, the Department allocated to the Colorado (Middle) River watershed $48,505 of the funds previously allocated to the Santa Ynez. On the Colorado River watershed the local people are ready and anxious to proceed at a greatly accelerated rate.

[2] Includes $300,000 for emergencies. Under authority of sec. 216 of the Flood Control Act of 1950, not to exceed $300,000 may be expended each fiscal year for emergency measures when a fire or any other natural element or force has caused a sudden impairment of the watershed. This amount is withheld from the allotments to the various watersheds at the beginning of each year on a proportionate basis. Such amounts as are not needed for emergency measures are redistributed, also on a proportionate basis, to these watersheds toward the end of the fiscal year for use therein.

Status of Program—Preliminary Examinations and Surveys

RECENT PROGRESS

Allocation of funds for surveys

Funds available for preliminary examinations and surveys made under the flood control acts have been allocated to the cooperating agencies in the Department as follows:

Agency	1954 obligations	1955 estimate	1956 estimate
Soil Conservation Service	$255,526	$245,268	
Forest Service	140,226	70,379	
Agricultural Research Service	29,786		
Total	425,538	315,647	

Status of surveys

The authority to conduct preliminary examinations and surveys for flood-prevention purposes was repealed by section 7 of the Watershed Protection and Flood Prevention Act, Public Law 566, 83d Congress, approved August 4, 1954, which reads as follows:

"The provisions of the Act of June 22, 1936 (49 Stat. 1570), as amended and supplemented, conferring authority upon the Department of Agriculture under the direction of the Secretary of Agriculture to make preliminary examinations and surveys and to prosecute works of improvement for runoff and waterflow retardation and soil-erosion prevention on the watersheds of rivers and other waterways are hereby repealed: *Provided*, That (a) the authority of that Department of Agriculture, under the direction of the Secretary, to prosecute the works of improvement for runoff and waterflow retardation and soil-erosion prevention authorized to be carried out by the Department by the Act of December 22, 1944 (58 Stat. 887), as amended, and (b) the authority of the Secretary of Agriculture to undertake emergency measures for runoff retardation and soil-erosion prevention authorized to be carried out by section 7 of the Act of June 28, 1938 (52 Stat. 1215), as amended by section 216 of the Act of May 17, 1950 (64 Stat. 163), shall not be affected by the provisions of this section."

All survey work conducted by the Department under authority of the Flood Control Act of 1936, as amended and supplemented, has been discontinued except for review surveys on 6 of the 11 watersheds in which the Department is permitted by section 7 of Public Law 566, 83d Congress, to continue to prosecute works of improvement for flood prevention.

Review surveys reports to be completed in 1955

The six review surveys are scheduled to be completed this fiscal year. The watersheds involved are: 1. Buffalo Creek, N. Y.; 2. Colorado (Middle), Tex.; 3. Little Sioux, Iowa, and Minn.; 4. Little Tallahatchie, Miss.; 5. Potomac, Pa., W. Va., Md., and Va.; 6. Yazoo, Miss.

These reviews of programs set forth in previously completed reports were authorized by the Congress after experience gained in the installation of improvement measures, changes in physical conditions on watersheds, development of improved techniques, changes in construction costs, and other factors revealed the need for revising the improvement programs and cost estimates.

Works of Improvement

CURRENT ACTIVITIES

The flood control acts provide for the reduction of floodwater, sediment, and erosion damages and the prevention of floods by watershed improvement measures for which the Department of Agriculture is responsible and for control of floods by main-stream control works for which the Department of the Army is responsible. The work of the Department under this item is carried on in the 11 watersheds authorized by the Flood Control Act of 1944, and consist of (*a*) the preparation of detailed sub-watershed or functional work plans which specify the kind of improvements to be installed for flood prevention, their location, and the work schedule, (*b*) the installation of works of improvement, such as diversions, dikes, gully-

stabilizing and water-retarding structures, debris and desilting basins, floodways, stream channel improvements, fire protection and woodland improvement measures, etc., in order to reduce flood, erosion, and sediment damage and retard runoff and control its movement into the main streams, and (*c*) the acceleration of land treatment measures to prevent erosion and protect the structural works of improvement from flood and sediment damage. Proposed improvements by the Department are correlated with and designed to protect mainstream work by the Corps of Engineers, the Bureau of Reclamation, and others, in addition to providing protection to the watershed lands and property above the mainstream works.

Program assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the flood-control acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of flood-prevention works of improvement in the authorized watersheds. Division of responsibility is in accordance with their respective specialist fields. The Forest Service activities are concerned with (*a*) all national forests and other lands in the authorized watershed that are administered by the Forest Service, (*b*) all range areas adjacent to national forests in the watershed and used in conjunction with such forests, and (*c*) other forest land within the watersheds. The Soil Conservation Service activities are concerned with other private and public lands in the watersheds.

Maintenance responsibilities

The proper and continued maintenance of installed measures is the key to the long-time effectiveness of the watershed improvement programs. Land owners and operators generally maintain conservation and other measures which benefit primarily the lands upon which they are installed. Local units of government generally maintain the measures which provide primarily offsite benefits.

RECENT PROGRESS

Allocation of funds for works of improvement

Funds available for planning and installation of flood-prevention works of improvement are allocated between the Soil Conservation Service and the Forest Service as follows:

Agency	1954 obligations	1955 funds available	1956 estimate
Soil Conservation Service	$6,079,623	$9,330,900	$7,692,000
Forest Service	1,154,313	1,266,323	1,008,000
Total	7,233,936	10,597,223	8,700,000

The following table provides a breakdown by watersheds of the allocations for 1955 and 1956 shown above:

Watershed	1955 funds available, agency distribution			1956 budget estimate, agency distribution		
	SCS	FS	Total	SCS	FS	Total
1. Buffalo Creek, N. Y.	$461,351	----------	$461,351	$325,420	----------	$325,420
2. Colorado (Middle), Tex.	496,067	----------	496,067	488,835	----------	488,835
3. Coosa, Ga., Tenn.	376,470	----------	376,470	334,169	----------	334,169
4. Little Sioux, Iowa, Minn.	1,045,989	----------	1,045,989	805,811	----------	805,811
5. Little Tallahatchie, Miss.	863,383	$230,421	1,093,804	614,605	$183,416	798,021
6. Los Angeles, Calif.	390,203	574,479	964,682	336,743	487,744	824,487
7. Potomac, Md., Pa., Va., W. Va.	277,905	18,569	296,474	228,542	14,544	243,086
8. Santa Ynez, Calif.	25,153	100,000	125,153	----------	50,000	50,000
9. Trinity, Tex.	2,360,689	----------	2,360,689	2,060,870	----------	2,060,870
10. Washita, Okla.	1,895,694	----------	1,895,694	1,493,787	----------	1,493,787
11. Yazoo, Miss.	1,137,996	342,854	1,480,850	1,003,218	272,296	1,275,514
12. Emergencies [1]	----------	----------	----------	----------	----------	----------
Total	9,330,900	1,266,323	10,597,223	7,692,000	1,008,000	8,700,000

[1] Under authority of sec. 216 of the Flood Control Act of 1950, not to exceed $300,000 may be expended each fiscal year for emergency measures when a fire or any other natural element or force has caused a sudden impairment of the watershed. This amount is withheld from the allotments to the various watersheds at the beginning of each year. Such amounts as are not needed for emergency measures are redistributed to these watersheds toward the end of the fiscal year for use therein.

Watershed work plans and improvement measures

The Soil Conservation Service has, in cooperation with soil-conservation districts, planned and installed watershed improvement measures in all 11 of the authorized watersheds. As of June 30, 1954, work plans had been developed for approximately 13 million acres or about 43 percent of the 30,102,774 acres in the authorized portions of the watersheds.

The folloing table lists some of the major watershed works of improvement which have been accomplished cooperatively by the Soil Conservation Service and local cooperators in 1954, and those planned to be installed in 1955 and 1956:

Explanation	Unit	1954 actual	1955 estimate	1956 estimate
1. Floodwater retarding structures	Number	71	115	106
2. Stabilizing and sediment-control measures:				
(a) Structures	do	82	60	202
(b) Debris basins and desilting basins	do	875	58	27
3. Subwatershed waterway improvement	Acre	61	25	276
4. Stream channel improvement	Mile	67	101	107
5. Diversion ditches and dikes	do	71	19	128
6. Floodways (channel excavation)	Mile	54	1	----------
	Cubic yard	3,406,927	70,000	----------
7. Stabilization of critical runoff and sediment-producing areas:				
(a) Roadside erosion control	Mile	165	436	234
(b) Revegetation of critical areas:				
(1) Grasses and legumes	Acre	9,425	3,850	6,990
(2) Woody plantings	do	9,256	2,325	30

Local cooperation on flood-prevention program

The establishment and maintenance of a sound flood-prevention program is dependent upon the willingness and ability of the local people to assume their full share of the responsibility for the works of improvement to be installed. This cooperation includes participation in planning, installation of land-treatment measures that contribute to flood prevention, securing of easements and rights-of-way, sharing of costs in some cases of works of improvement primarily for flood prevention, and assumption of full responsibility for maintenance of improvements installed. The following are examples of local cooperation:

1. In the State of Mississippi, the Tallahatchie Soil Conservation District commissioners and the county drainage district have provided rights-of-way and local participation to cover 40 percent of the cost of a $116,000 installation in one subwatershed of the Little Tallahatchie River watershed. A recent bond issue was in the amount of $75,000.

2. In Wilkin Creek, a tributary to the Little Tallahatchie River, the local people organized into an informal group and have assessed themselves an annual levy to turn over to the local soil-conservation district to finance rights-of-way and maintenance costs.

3. In Brady Creek, a tributary of the Middle Colorado River watershed, the local people have obtained all easements and rights-of-way necessary to the installation of 46 floodwater-retarding structures and over 40 miles of floodways. This required the cooperation of the county as 1.5 miles of roads must be relocated. The estimated total non-Federal contribution is in excess of one-half million dollars.

Effect of watershed improvements

The effect of watershed improvement measures on reduction of flood damages was clearly evident during the April 1954 storms in the Sandstone Creek subwatershed of the Washita River watershed in Oklahoma. The weighted average rainfall over the watershed was: April 25, 0.73 inch; April 27, 1.05 inches; and April 29, 2.21 inches. The maximum intensity was recorded as 3.2 inches per hour. The extreme intensity of the rainfall, the poor condition of vegetative cover as a result of prolonged drought, and the antecedent rainfall on April 25 and 27 combined to produce excessive runoff from the storm of April 29. It was the opinion of operators of floodplain land above the junction of the East and West Forks of Sandstone Creek that if the floodwater-retarding structures had not existed, the flood peak would have exceeded that of the record breaking floods of 1934 and 1935. Most of the structures on the West Fork of Sandstone Creek

received enough runoff to cause operation of the automatic drawdown. All the structures functioned effectively. The floodwater which was retained was discharged over a period of several days. At peak flow the channel on Sandstone was able to contain all the runoff water except for an area at the mouth of the creek which was affected by backwater from the Washita. This is a section of the creek where a channel improvement or floodway is yet to be constructed.

A district supervisor in the Upper Washita Soil Conservation District commented specifically on the effectiveness of the conservation land treatment as well as of the floodwater-retarding structures. He stated that without the flood prevention work on Sandstone, Beaver Dam, and Kiowa Creeks, this particular flood could have been more disastrous than the one of April 1935, when 17 people lost their lives. No lives were lost in this storm and agricultural damage on the three treated watersheds was practically negligible.

ACTIVITIES OF THE FOREST SERVICE

Measures to improve and protect watersheds

The Forest Service has participated with local interests on 5 of the 11 authorized flood-prevention watersheds. Deteriorated forest and mountain wildlands contribute to floodwater and sediment damages on these watersheds. During the fiscal year 1954 flood-prevention works of improvement were restricted to the following items: (1) mountain channel stabilization; (2) road-erosion control; (3) revegetation of critical sediment source areas; and (4) technical assistance to private owners to improve the hydrologic condition of forests and woodlands.

The following table lists the principal flood-prevention works of improvement for which the Forest Service was responsible on the watersheds of the Los Angeles, Little Tallahatchie, and Yazoo Rivers:

Explanation	Unit	1954 actual	1955 estimate	1956 estimate
Road-erosion control, public lands	Mile	6.5	25	40
Fire protection:				
Fire-control roads	do	3	15	10
Water developments	Number	10	6	5
Heliports	do	42	20	20
Crew barracks	do	1	1	1
Mobile fire equipment	do	6	7	5
Revegetation of critical source areas:				
Seeding and planting (trees and shrubs)	Acre	13,646	23,000	30,000
Soil-stabilizing brush dams	Number	53,263	50,000	70,000
Mulching	Acre	7,209	8,000	9,000
Mountain channel stabilization:				
Barriers	Number		12	20
Bank stabilization-planting	Square yard		1,000	2,000
Channel clearing	Acre	15	30	30

Woodland plantings

During the past year in the Yazoo and Little Tallahatchie River watersheds, more than 30 million trees were planted on more than 19,000 acres of critically eroding farmlands in northern Mississippi with assistance from this and other programs of the Department of Agriculture. Some 7,200 acres, too actively eroding to permit direct planting, were temporarily stabilized by mulching and small brush dams prior to planting. In addition to the effective soil stabilization being accomplished by these plantations, local economy will also be improved. Projecting growth about 15 years in these plantations, an estimated volume of 942,000 cords of pulpwood will be available for harvest at an estimated stumpage value of $3,768,000.

Fire protection

Intensification of fire protection on steep national-forest lands was a major accomplishment on the watersheds of the Los Angeles and Santa Ynez Rivers. Protection of these steep, brush-covered lands directly above highly developed residential and agriculture lands, and above numerous Federal and local flood- and debris-control structures, continued to be a dominant factor in adequate flood protection in the southern California area. Protection on these 2 watersheds was intensified during the past year by the purchase and installation of 12 mobile and stationary short-wave radios to facilitate communication and detection. About five pieces of mobile fire-control equipment, including tankers, tractors, and trucks, were purchased. Several helicopter landing spots were constructed

and 3 miles of fire roads were rebuilt. Special fire crews were trained and used during a 6-month period for initial attack on all fires in these watersheds. During their period of employment, all fires starting in these two areas were suppressed and controlled at the minimum burned area without creating serious flood and debris threat to downstream values. One major fire occurred in the Los Angeles watershed after these specially trained fire crews were released. This fire resulted in extensive flood and debris damage to downstream residential areas and flood- and debris-control structures located in the foothill canyons.

Watershed improvements

On the Los Angeles River watershed, additional works of improvement included (1) the stabilization of cut and filled slopes on some 20 miles of mountain roads which contribute significantly to the floodwater and debris problems; (2) clearing boulders and riparian vegetation clogging some 15 acres of mountain stream bed; (3) development of detail project plans in cooperation with the Los Angeles County Flood Control District for the stabilization of Haines Canyon, a critical mountain flood source area.

Emergency measures

Under authority of section 216 of the Flood Control Act of 1950 emergency treatment of some 48,000 acres denuded by fire on 6 watersheds, 1 of which was the Los Angeles, was accomplished during the past year. Each of the areas treated was located in steep, mountainous country where potential flood and debris damage was a serious threat to adjacent downstream industrial, residential, and agricultural developments. The most critical of the areas treated were the Monrovia Peak and Barrett Canyon burned areas in southern California where late winter storms hit before the emergency treatment measures were fully installed. Emergency seeding had just been completed when high intensity rainfall brought extensive debris and sediment damage to residential areas at the foot of the mountain. Construction of two debris-retention structures was immediately rushed to completion to minimize further damage.

General Basin Investigations

CURRENT ACTIVITIES

The Department is participating with six other Federal departments and agencies and with the respective States concerned, in planning comprehensive, integrated resource-development programs for the Arkansas-White-Red River and New England-New York areas. Field work is planned to be completed early in this calendar year. Reports outlining plans for the development, use, and conservation of all natural resources in those areas are in process of preparation and are scheduled for completion by the end of the current fiscal year. In the event the Department is unable to complete its part of these reports as scheduled, funds for this work remaining unobligated as of June 30, 1955, would be used to finish and print the reports in the 1956 fiscal year.

Agency participation

Funds provided specifically for general basin investigations in the Department are allocated as follows:

Agency	1954 obligations	1955 estimate	1956 estimate
Soil Conservation Service	$114,599	$268,072	
Forest Service	20,745	24,321	
Agricultural Research Service	31,766	30,705	
Farmers Home Administration	1,484		
Total	168,594	323,098	

DECREASES IN FLOOD-PREVENTION BUDGET

Mr. Marshall. Do you have a general statement for this item, Mr. Williams?

Mr. Williams. No additional statement.

Mr. Marshall. This item shows several decreases: Completion of survey work $177,500, completion of basin investigations, $300,000.

Mr. Williams, would you discuss each one of the proposed reductions?

Mr. WILLIAMS. Mr. Chairman, I believe that the members of the committee know that these 11 projects we are discussing under this item were authorized by the Flood Control Act of 1944 and have been active since that time. It involves work by the Forest Service as well as Soil Conservation Service.

Mr. ANDERSEN. At this point, as long as the Forest Service was mentioned, we usually have comments from the Forest Service in relation to their part in flood prevention. I believe Mr. Swingler is here, is he not? I wonder if Mr. Swingler could be given a few minutes to give us a picture as far as the Forest Service is concerned, Mr. Chairman.

Mr. MARSHALL. I believe we should complete that after Mr. Williams completes his statement on these 11 watersheds.

Mr. WILLIAMS. With the passage of Public Law 566 by the 83d Congress, the flood control acts, insofar as the authority for the Department of Agriculture is concerned, were repealed with the exception of the continuation of the work on these 11 authorized projects. Therefore, there is no further need for survey money to be appropriated under the authority of the flood control act. We anticipate completing the review survey that we have in progress on the 11 authorized projects with the money presently available for survey purposes. Because of the repeal of the flood acts as they affect the Department, we have not requested further survey funds under this item.

Also, it is anticipated that the general river basin planning activities will be brought to conclusion with the funds now available. Any future work of that character would be carried out under other authorities. The rounding of the works of improvement figure, the smaller one there, is self-evident.

FLOOD PREVENTION ROLE OF THE FOREST SERVICE

Mr. MARSHALL. At this point, then, Mr. Swingler, will you discuss the Forest Service activity?

Mr. SWINGLER. I do not know whether I can add anything to Mr. Williams' talk or not. I will say that, of course, the Forest Service, as this committee knows better than anyone, has been very much interested in flood prevention for a good many years.

Under our authority, now, Forest Service is responsible for flood prevention work on the national forest and other land under its jurisdiction, on range land used with national forests and on privately owned forest lands. In this latter category we work through the State forester.

Practically all of our work to date outside the emergency work in southern California has been the land treatment measures, such as tree planting and fire prevention, stream bank stabilization and that sort of thing. Of course, as you can well imagine, we need to and do work very closely with the Conservation Service from the very beginning—here trying to explain it to you people—in making up the plans, and working them out with the cooperation of the State and local agency.

I have some pictures here showing our work, which I will leave with the committee. They show the kind of land treatment program I am talking about.

ARKANSAS-WHITE-RED RIVER AND NEW ENGLAND-NEW YORK INVESTIGATIONS

Mr. MARSHALL. Mr. Williams, in general, what have been the results of the investigations in the Arkansas-White-Red River, and New England-New York areas?

Mr. WILLIAMS. Mr. Chairman, the investigations on the Arkansas and White-Red River Basin in the Southwest were launched a few years ago as a Federal Government effort in which several departments of the Federal Government are concerned, working with the various States involved in that basin. The work is being brought to a conclusion in that a skeleton plan for basin development will be developed by the interagency committee on which the Department has a representative. That general program will then be available for the general guidance of the States and the Federal Government.

Mr. Young, my deputy, has been in closer touch with that than I have and with your permission, I would like to have him comment on this general basin investigation item.

Mr. MARSHALL. Mr. Young, we will hear from you.

Mr. YOUNG. Mr. Chairman, plans are to complete reports for both the Arkansas-White-Red River Basin and the New York-New England area around the end of this fiscal year. Provision is being made, I believe, to do some revision of the reports after that if it is necessary. In both instances, the reports will be sent by the river basin committees to Washington sometime this spring or early summer for review of all of the Federal agencies that are participating in them and will also be sent to the States participating in them. Both reports will be several volumes in size and will represent a general cataloging of proposed developments. The agricultural sections of the reports will deal with potential developments of land, water, and forests.

FUNDS AVAILABLE FOR 1955

Mr. MARSHALL. We are interested in the total amount you have available for 1955, Mr. Williams. What is your 1955 appropriation?

Mr. WILLIAMS. The appropriation for 1955 was $7,482,000.

Mr. MARSHALL. What did you carry over from 1953?

Mr. DORNY. The carryover from 1953 was $1,033,755. We also had a carryover from 1954 of $845,676. The 1953 carryover was set aside in reserve and added to the 1954 carryover. The two sums added to the appropriation for this year constitute the total funds available for 1955. Also, there is an appropriation adjustment, the so-called land treatment measures which have been carried for some years as an item in the conservation operations appropriation and also in the "Salaries and Expenses" appropriation of the Forest Service, have been placed back in this appropriation.

Mr. MARSHALL. That will give you a total of how much available?

Mr. DORNY. $10,597,223 in the fiscal year 1955, as against $8,700,000 plus whatever carryover there might be from the $10,597,223 available this year. Whatever carry over there might be would be added, of course, to the $8,700,000 for 1956.

The table on the page following page 252 carries the statement on funds available as compared with appropriated funds and what is estimated for 1956.

OBLIGATIONS

Mr. MARSHALL. How much will you actually obligate in 1955?

Mr. DORNY. We will try to obligate all of the $10,597,223. In the construction program we try to get construction contracts awarded as soon as possible. This program requires local participation in the way of furnishing easements and rights-of-way, and also financing and other activity on the part of the local people before we can award contracts. It is probable that some of this $10,597,223 will carry over.

Mr. MARSHALL. What is the difference between $7,482,000 appropriated and the figure in your table of $7,004,500?

Mr. WHEELER. This table is just for works of improvement. It does not include funds for surveys and general basin investigations. That is the difference.

Mr. DORNY. I have excluded the surveys and basin investigations for which no funds are proposed in 1956.

Mr. ANDERSEN. Are we going to have as much, if not more, money available for actual construction work on the 11 watersheds in fiscal 1956 as we did in fiscal 1955?

Mr. DORNY. There will not be as much in the way of funds available but the appropriation for the 2 years will be approximately the same. The difference between the appropriation and $10,597,000 is the carryover from prior years and most of that difference would not be available in 1956.

Mr. ANDERSEN. Most of that would not be available for 1956, or in any like sum?

Mr. DORNY. We could have as much as $800,000, the carryover from 1954, but this was just a little bit more than usual. It would probably be somewhere between half a million dollars and a million dollars.

Mr. ANDERSEN. But you are eliminating about $300,000 in surveys, are you not?

Mr. DORNY. For general basic investigations, sir, and for flood prevention surveys, a total of $477,500 is being eliminated.

Mr. ANDERSEN. But that elimination in surveys does not make up, does it, for the amount of money which was available to this year, for example, from previous funds as compared to what will be available for 1956?

We will not be able to pursue the work on these projects as rapidly in 1956 as we did in 1955. Is that correct?

Mr. WILLIAMS. That appears to be correct.

Mr. ANDERSEN. The work will be slowed down? Of course as you all know we have had testimony for a good many years in this subcommittee that before we get these watersheds completed at the present rate, all of us will be old men, if here at all, and I am just wondering if we are not being pennywise and pound foolish by doing this work so slowly.

STATUS OF COMPLETION ON CERTAIN WATERSHED PROGRAMS

Mr. MARSHALL. We have heard a lot about the 11 watersheds. For my information and the information of the committee, how nearly complete are you with Buffalo Creek, N. Y., percentagewise? Can you give us an estimate?

Mr. BROWN. The difficulty, Mr. Chairman, of giving an estimate based on the old survey report is that the figures would be rather meaningless. We are in the process now of revising that survey report and will have a completed report by the end of this fiscal year, which will show the total remaining job. At the present time, I would say we are approximately 50 percent through with the job there.

Mr. MARSHALL. How about the Colorado?

Mr. BROWN. The middle Colorado?

Mr. MARSHALL. Does your same situation exist in all the watersheds?

Mr. BROWN. We are nearer through on Buffalo Creek than we are on a number of other watersheds. On the middle Colorado, on the basis of the program now visualized, we have completed less than 5 percent of the work. It will probably take another 60 or 65 years at the current rate of appropriation to complete that program.

Mr. ANDERSEN. That is the point I would like to see accentuated. Don't you think it is rather foolish to proceed on a work of this nature at the present snail's pace?

Mr. MARSHALL. Mr. Brown, are the local people meeting their obligations?

Mr. BROWN. Yes, the local people are meeting their obligations in the middle Colorado. For example, they have already obtained land easements and rights of way required for installation of retarding structures and related measures that would cost some $3,800,000.

Mr. MARSHALL. The delay in the progress of getting the work completed rests upon the Federal Government, is that right?

Mr. BROWN. In that watershed our inability to have made available any more than the amount shown in this table has resulted in a slow rate of progress. We have, as you may note by comparing the figures, tried to make some slight adjustment in order to put a little more money into the middle Colorado watershed in this coming year because of the local people being so far ahead in meeting their commitments.

Mr. MARSHALL. We are interested in the completion of the Coosa in Georgia.

Mr. BROWN. Mr. Chairman, these are all in about the same status insofar as supplying definite information now. Within another 3 or 4 months I think we will be in a position, based on the completion of the review surveys, to furnish this committee with rather accurate information on that.

Again, the Coosa is one of those which has not had a very large allotment of funds over the past year. Only about 15 percent of the job has been completed. It will require nearly 15 years more to complete at the current rate.

Mr. MARSHALL. The Little Sioux in Iowa and Minnesota?

Mr. BROWN. That is in about the same status, probably less further along than the Coosa.

Mr. MARSHALL. Less than 25 percent?

Mr. BROWN. Approximately 25 percent. It would take about 2 years to complete at the present rate.

Mr. MARSHALL. The Little Tallahatchie?

Mr. BROWN. I think it has made quite substantial progress, although there is a large remaining amount of work to be done in that area. Approximately 20 percent of the program has been completed.

Mr. MARSHALL. The Los Angeles in California?

Mr. BROWN. The Los Angeles is one of those watersheds in which we have now been able to schedule out that part of the work which the Soil Conservation Service has responsibility for to a fairly definite conclusion. That program, which is our part of the job, can be completed in the fiscal year 1960 if the amount budgeted this year were continued over the next 3 or 4 years and slightly less were provided in the last 2 years.

The Forest Service, Mr. Swingler, might speak to that.

Mr. MARSHALL. Before you do, how does it happen that the Los Angeles has proceeded more rapidly than the others? Have the local people taken hold of it?

Mr. BROWN. That is one of the reasons. There is a strong county flood control district in Los Angeles County which has been making available 50 percent of the total cost of carrying out the program. There has been a rather limited type of program, limited in terms of area there that was embraced in the original authorization. Insofar as the Soil Conservation Service was concerned, it represented treatment of a group of tributary channels to the upper Los Angeles River in San Fernando Valley. We have just come to the point where we can now see the conclusion of this job, unlike some of the larger watersheds, such as the Washita, the Tallahatchie and others.

Mr. SWINGLER. I just checked with Mr. Murphy and he tells me that our present rate will require about 15 years for us to complete the work we have lined up.

Mr. ANDERSEN. Did we not give quite a boost to that particular watershed in appropriations this past year?

Mr. SWINGLER. What happened is that we transferred some money from the structural measures to the fire protection. I think that authority still carries on. The figure last year was $176,000.

Mr. MARSHALL. How about the Potomac?

Mr. BROWN. The Potomac is one of those watersheds in which the original authorization does not visualize anything beyond the land-treatment program. We are there, likewise, in the process of making an investigation to determine the extent of needs for structural programs. Until we get further along it would be pretty difficult to say what the extent of completion of that job is.

Mr. MARSHALL. Not over 20 percent at the time?

Mr. BROWN. No. I would say probably 5 to 10 percent of what we probably will recommend in this new survey report. It would take 40 to 50 years to complete this program at the current rate.

Mr. MARSHALL. The Santa Ynez in California?

Mr. BROWN. The Santa Ynez is another one of those in which the Soil Conservation Service has one area of responsibility and the Forest Service another. Speaking only for the Soil Conservation Service part of that job, we are practically at a standstill in that

watershed at the present time. We have switched some funds out of it for the reason that the local people have not wanted to go ahead at the present time any further than we have now gone. They have not wanted to provide the necessary land easements and rights-of-way. So we are holding our part of that more or less in abeyance.

Mr. SWINGLER. That is also true for the Forest Service but for another reason. We are up to our limitation on the original survey. We are still putting $50,000 a year in there in fire protection. We have, however, completed our installation work under the original plan.

Mr. MARSHALL. The Trinity in Texas?

Mr. BROWN. The Trinity is one that is far behind in the total program. It would take about 20 years to complete the program at the current rate.

Mr. ANDERSEN. If I recall correctly, there is much interest, down in the State of Texas, as far as local people are concerned, in doing something worthwhile in bringing the work on the Trinity to a conclusion; is that not right?

Mr. BROWN. Yes, sir; they have been very active down there. They appeared before your committee for a number of years.

Mr. MARSHALL. How near complete are they at the present time?

Mr. BROWN. I would say about 15 percent.

Mr. MARSHALL. The Yazoo. I guess we missed the Washita. That was quite comparable.

Mr. BROWN. The Trinity and the Washita are quite alike in that respect. The Washita is a little more than 15 percent completed and would take about 25 years to finish at the current rate. The Yazoo is less than 15 percent done and will take over 20 years to complete.

PROPOSED CHANGES IN LANGUAGE

Mr. MARSHALL. You have some language changes, Mr. Williams, will you discuss those?

Mr. WILLIAMS. I think perhaps Mr. Wheeler might do that.

Mr. WHEELER. Mr. Chairman, on page 254 of the justifications there are indicated the changes in language. The first change eliminates the reference to preliminary examinations and surveys. As has already been explained, Public Law 566 repealed our authority for that work. Similarly, the reference to the general basin investigations in the Arkansas-White-Red River area and the New England-New York area are eliminated because those are expected to be completed with funds we now have.

The third change eliminates language prohibiting the use of funds for the purchase of lands in the counties of Adair, Cherokee, and Sequoyah in Oklahoma, and Neosho, Cottonwood, Verdigris, Caney and tributaries in Kansas. Again, since the passage of Public Law 566 we would not be carrying on any operations in those areas, and reference to prohibition for the use of funds is not needed in the appropriation language.

The final change eliminates the specific amount carried in connection with the use of funds in the last proviso for necessary gulley control, flood-water detention, and flood-waste structures in areas other than those over which the Department of Army has jurisdiction and responsibility.

Since the entire appropriation hereon will be used for works o improvement, the specification of an amount for that purpose is n longer needed.

PROPOSED TRANSFERS OF FUNDS TO FLOOD PREVENTION

If you are about to close, I wonder if I could draw your attentio to one other matter. During my statement at the beginning of th hearings, I inserted in the record a statement on transfers in th estimates in various places throughout the budget. One of them i in the flood-prevention item. Perhaps you are familiar with it There have been several references to it already. On page 250 ther is a brief explanation of the proposal to shift funds which, since 1954 have been appropriated to the Soil Conservation Service in the on case, and the Forest Service in the other, to shift those funds bac to flood-prevention appropriation.

We believe that by shifting back the funds for intensified land treatment measures, which in earlier years were carried under th flood-prevention appropriation, we can keep the total program i better balance through the budget process as between the two majo types of work, the so-called A and B measures, or the land-treatmen and structural-type measures.

This shift in funds does not affect the level of appropriations, bu rather, puts under the flood-prevention appropriation, where the originally were for many years, the funds for intensifying land treatment measures which are an integral part of the flood-preventio job.

We feel that that will be an improvement in the budget structure Both we in the Department and you in the Congress, I know, hav had some difficulty resulting from the financing of this program i 1954 and 1955 from several different appropriations. We hope yo will see fit to approve that proposal.

Mr. MARSHALL. We note that you are requesting replacement o six cars.

Mr. DORNY. That was also covered in our previous discussion o our passenger motor vehicle fleet.

Mr. ANDERSEN. No questions. You have been very good in per mitting us to ask questions as we proceeded, Mr. Chairman.

WATER CONSERVATION AND UTILIZATION PROJECTS

Mr. MARSHALL. We will turn to pages 264 through 270 of th justifications, items having to do with water conservation and utiliza tion projects. Do you have a statement, Mr. Williams?

Mr. WILLIAMS. Mr. Chairman, we are not asking for any funds under this item for the fiscal year 1956 for the reason that the two projects under way have sufficient funds appropriated to carry us through the next fiscal year. There have been some delays on the Eden Valley project with respect to the Bureau of Reclamation's part of this activity, which has meant deferring some of the work tha we were planning to do this year until next year. Because these funds do carry over, we will be able to proceed next year with the funds we already have. That is the reason that we have not re quested any——

Mr. MARSHALL. Do you estimate that you will carry over $417,830?
Mr. WILLIAMS. Is that the correct figure?
Mr. DORNY. Yes.
Mr. MARSHALL. That is still a current estimate? That is your latest estimate?
Mr. DORNY. Yes. Originally we went to the Bureau of the Budget with a slightly different figure, but we inserted our latest estimates into the budget.

ESTIMATED COMPLETION DATE OF PROJECTS

Mr. MARSHALL. Can you tell us your estimate of the completion date for all of the uncompleted projects?
Mr. WILLIAMS. We have an estimate on that on page 268 of the budget notes. It indicates that the project there on the first page of 268, the Angustora project would be completed within the fiscal year 1956, which means this fall. This fall we hope to get that wound up. The Eden Valley project in Wyoming will continue past fiscal year 1956. It will probably be completed in the fiscal 1958 depending upon the outcome of the Bureau of Reclamation's activities.
Mr. ANDERSEN. Would you say that the original purposes for these appropriations have been met? I refer to Angustora and Eden Valley.
Mr. WILLIAMS. I believe so, Mr. Andersen. I think most of these projects have turned out pretty well. We have had a number of problems with them. There have been delays from time to time, as you know. No further new projects have been authorized under this Case-Wheeler authority.
Mr. ANDERSEN. As a matter of information, who takes care of the maintenance after these projects are completed?
Mr. WILLIAMS. That, of course, varies by projects, but the local irrigation district or local organization assumes that responsibility; if the work is on the individual farms, the purchaser of that land assumes the responsibility.
Mr. ANDERSEN. I would like to express my appreciation to you gentlemen for a very good hearing relative to the Soil Conservation Service.
Mr. VURSELL. I would like to add my sentiments to the sentiments expressed by the gentleman from Minnesota, Mr. Andersen. I think you have done a very good job, from my limited observation.
Mr. WILLIAMS. Thank you.
Mr. MARSHALL. We thank you.

EXTENSION SERVICE

WITNESSES

ERVIN L. PETERSON, ASSISTANT SECRETARY OF AGRICULTURE
C. M. FERGUSON, ADMINISTRATOR, EXTENSION SERVICE
L. M. SCHRUBEN, ASSISTANT ADMINISTRATOR, EXTENSION SERVICE
JOSEPH C. WHEELER, DIRECTOR OF FINANCE AND BUDGET OFFICER, DEPARTMENT OF AGRICULTURE

PAYMENTS TO STATES, HAWAII, ALASKA, AND PUERTO RICO

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$27,165,956	$39,675,000	$45,475,000
Reimbursements from non-Federal sources	211		
Reimbursements from other accounts	8,977		
Total available for obligation	27,175,144	39,675,000	45,475,000
Unobligated balance, estimated savings	−3,895		
Obligations incurred	27,171,249	39,675,000	45,475,000
Comparative transfer from—			
"Agricultural Marketing Act, Agriculture"	535,000		
"State and private forestry cooperation, Forest Service"	87,865		
"Cooperative agricultural extension work, Extension Service"	4,711,200		
Comparative transfer to "Salaries and expenses, Federal Extension Service":			
Direct appropriation	−243,982		
Reimbursements from non-Federal sources	−211		
Reimbursements from other accounts	−8,977		
Total obligations	32,252,144	39,675,000	45,475,000

NOTE.—Reimbursements from non-Federal sources above are from proceeds of sales of personal property (40 U. S. C. 481 (c)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
1. Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the act of June 26, 1953 (Public Law 83)	$31,597,279	$38,662,000	$44,155,000
2. Payments for cooperation in farm forestry extension work under section 5 of act of June 7, 1924 (Clarke-McNary Act, as amended by the act of October 26, 1949 (16 U. S. C. 568))	87,865	88,000	
3. Payments and contracts under section 204b–205 of the Agricultural Marketing Act of 1946 (7 U. S. C. 1623–1624)	535,000	925,000	1,320,000
4. Payments for assistance in farm housing under title V, section 506a, of the Housing Act of 1949 (42 U. S. C. 1476)	32,000		
Total obligations	32,252,144	39,675,000	45,475,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
07 Other contractual services	$91,000	$125,000	$180,000
11 Grants, subsidies, and contributions	32,161,144	39,550,000	45,295,000
Total obligations	32,252,144	39,675,000	45,475,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$167,528	$121,144	$246,144
Obligations incurred during the year	27,171,249	39,675,000	45,475,000
	27,338,777	39,796,144	45,721,144
Adjustment in obligations of prior years	−146,240		
Reimbursements	−9,188		
Obligated balance carried forward	−121,144	−246,144	−274,144
Total expenditures	27,062,205	39,550,000	45,447,000
Expenditures are distributed as follows:			
Out of current authorizations	27,041,037	39,429,825	45,234,000
Out of prior authorizations	21,168	120,175	213,000

Mr. WHITTEN. The committee will come to order.

We are pleased to have before us the officials of the Federal Extension Service. I believe the general statement will be presented by Assistant Secretary Peterson, under whose overall supervision this work comes.

We will include in the record at this point pages 160, 161, 163, 164, and 171, and tables 1 through 4 of the justifications.

(The pages referred to follow:)

PURPOSE STATEMENT

The nationwide system of cooperative Federal-State extension work in agriculture and home economics is authorized and conducted under the Smith-Lever Act as amended by the act of June 26, 1953, Public Law 83. Its function is to take research results, farm situation, and program facts of the Department of Agriculture and the State agricultural colleges and experiment stations and combine them into an adequate educational program which will effectively provide the means by which rural people can solve their own farm and family problems. The activities of the entire cooperative extension organizations are directed toward:

1. Insuring the economic stability of the farm family by maximizing their income through the application of technology resulting from research in agriculture and home economics. This is done by teaching the application of science in order to improve efficiency of farm and home operations, to develop and conserve natural resources, and to improve marketing methods.

2. Increasing the efficiency of market operations by bringing research findings to handlers, processors, wholesalers, retailers, and those engaged in transportation and storage; encouraging them to apply these findings to their operations; and expanding market information for consumers.

3. Improving family living through better housing and home facilities, use of labor-saving equipment and methods, farm and home safety measures, and community development.

4. Improving health through better nutrition and sanitation and by more effective utilization of health and recreational facilities and services.

5. Assisting youth to understand the application of science to farming, homemaking and marketing through 4–H Club work and to train youth to accept their full responsibility as citizens.

6. Developing a better understanding of the many forces which occur off the farm which have a bearing on the economic and social welfare of the farm family and influence farming operations and home and community life.

The cooperative extension service is financed from Federal, State, county and local sources. These funds are used within the States for the employment of county agents, home demonstration agents, 4–H Club agents, State specialists and others who conduct among rural people the joint educational programs adapted to local application.

The Federal Extension Service, the educational arm of the United States Department of Agriculture, is responsible for administration, coordination, and program leadership for the cooperative extension program in the 51 State and Territorial Extension Services including county extension offices in more than 3,000 counties. The Federal Extension Service, as a partner in the cooperative extension effort, is responsible for administering the provisions of Federal laws authorizing extension work; maintaining a modern, efficient and dynamic extension system in each State and Territory; coordinating the work among the States in cooperation with committees of State directors; pioneering in new educational methods; evaluating the results of work performed; maintaining liaison with research, service, adjustment, and regulatory agencies of the Department; coordinating all educational work of the Department; and cooperating with other departments of Government and private organizations in matters relating to extension education.

On November 30, 1954, there were approximately 13,500 State and county extension workers attached to the State organizations, and 224 Federal employees, 208 of whom were in Washington.

	Appropriated, 1955	Budget estimates, 1956
Appropriated funds:		
Payments to States, Hawaii, Alaska, and Puerto Rico	$39,675,000	$45,475,000
Salaries and expenses, Federal Extension Service:		
Administration and coordination	1,920,000	1,920,000
Penalty mail	1,942,500	1,942,500
Total appropriated funds	43,537,500	49,337,500

Payments to States, Hawaii, Alaska, and Puerto Rico

Appropriation Act, 1955, and base for 1956	$39,675,000
Budget estimate, 1956	45,475,000
Increase	+5,800,000

Summary of increases and decreases, 1956

To provide for additional State and county extension workers to carry on an expanded extension program including an intensified on-the-farm advisory service	+$5,493,000
For additional educational work in marketing to meet urgent current problems	+395,000
Decrease due to shifting farm forestry extension work to the appropriation for the Smith-Lever Act, as amended	−88,000

Project statement

Project	1954	1955 (estimated)	Increase or decrease	1956 (estimated)
Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the act of June 26, 1953 (Public Law 83)	$31,597,279	$38,662,000	+$5,493,000	$44,155,000
Payments for cooperation in farm forestry extension work under sec. 5 of the act of June 7, 1924 (Clarke-McNary Act, as amended by the act of Oct. 26, 1949 (16 U. S. C. 568))	87,865	88,000	−88,000	
Payments and contracts under secs. 204b-205 of the Agricultural Marketing Act of 1946 (7 U. S. C. 1623-1624)	535,000	925,000	+395,000	1,320,000
Payments for assistance in farm housing under Title V, sec. 506a, of the Housing Act of 1949 (42 U. S. C. 1476)	32,000			
Unobligated balance	3,895			
Total available or estimate	32,256,039	39,675,000	+5,800,000	45,475,000
Transfer in 1955 estimates from—"Agricultural Marketing Act, Agriculture"	−535,000			
"State and private forestry cooperation, Forest Service"	−87,865			
"Cooperative agricultural extension work, Extension Service"	−4,711,200			
Transfer in 1955 estimates to "Salaries and expenses, Federal Extension Service"	+243,982			
Total appropriation or estimate	27,165,956			

PAYMENTS TO STATES AND TERRITORIES

Federal funds available for fiscal year 1955 for cooperative agricultural extension work within the States, Hawaii, Alaska, and Puerto Rico under the Smith-Lever Act as amended ($38,662,000), funds for farm forestry extension work under the Clarke-McNary Act ($88,000) and for carrying out the provisions of the Agricultural Marketing Act ($800,000 for payments to States and $125,000 for contracts) total $39,675,000.

Payments to the States and Territories are made directly to a designated officer in each State and Territory and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Administrator of the Federal Extension Service on behalf of the Secretary of Agriculture. As shown on table 3 some matching by States and Territories is required by law before the funds become available. As reflected on table 2, at present less than 40 percent of the cost of extension work is being financed from Federal sources and more than 60 percent from State and local sources. The funds are used by the States for the employment of extension workers to carry on cooperative agricultural extension work. Paid extension workers are being assisted by a network of voluntary neighborhood leaders who cooperate in carrying out extension programs.

The use of these funds is indicated in greater detail in the following tables. Table 1 indicates the distribution of the proposed increases and total proposed payments to States for fiscal year 1956 under the Smith-Lever Act, Public Law 83. Table 2 indicates the sources of funds allotted for cooperative extension work in the States, Alaska, Hawaii, and Puerto Rico for 1955 including allotments under the Clarke-McNary Act and the Agricultural Marketing Act. Table 3 shows estimated direct payments to and contracts with the States and Territories for 1956, indicating those which require offset by State, county, or local funds, those where such offset is not required, and the basis of allotment. Table 4 indicates the various classes of field agents employed with extension funds.

TABLE 1.—*Allocation of Federal funds appropriated under the Smith-Lever Act, as amended June 26, 1953 (Public Law 83) for 1955, and proposed increases over total for fiscal year 1956*

States	Allocations to States exclusive of amounts distributed on the basis of special needs		
	1955	Proposed increase 1956	Total proposed for 1956
Alabama	$1,431,453	$181,887	$1,611,340
Arizona	193,961	23,791	217,752
Arkansas	1,177,975	144,310	1,322,285
California	928,028	160,158	1,088,186
Colorado	363,780	44,000	407,780
Connecticut	202,131	28,101	230,232
Delaware	106,082	9,191	115,273
Florida	447,524	69,512	517,036
Georgia	1,496,274	189,598	1,685,872
Idaho	275,284	33,274	308,558
Illinois	1,175,308	172,186	1,347,494
Indiana	975,649	143,975	1,119,624
Iowa	1,074,997	147,039	1,222,036
Kansas	743,479	89,357	832,836
Kentucky	1,388,594	189,549	1,578,143
Louisiana	937,148	116,566	1,053,714
Maine	265,030	34,467	299,497
Maryland	362,826	53,315	416,141
Massachusetts	277,678	43,670	321,348
Michigan	1,062,700	160,950	1,223,650
Minnesota	1,027,029	141,729	1,168,758
Mississippi	1,469,015	189,124	1,658,139
Missouri	1,225,823	162,402	1,388,225
Montana	279,657	29,831	309,488
Nebraska	624,969	74,115	699,084
Nevada	85,507	4,625	90,132
New Hampshire	143,426	16,085	159,511
New Jersey	274,687	42,823	317,510
New Mexico	249,729	29,871	279,600
New York	983,567	162,035	1,145,602
North Carolina	1,859,909	270,798	2,130,707
North Dakota	432,692	48,009	480,701
Ohio	1,319,430	201,741	1,521,171
Oklahoma	1,025,967	109,381	1,135,348
Oregon	375,192	56,993	432,185
Pennsylvania	1,274,498	219,161	1,493,659
Rhode Island	82,535	7,058	89,593
South Carolina	1,022,475	136,443	1,158,918
South Dakota	435,697	47,059	482,756
Tennessee	1,402,222	193,163	1,595,385
Texas	2,328,749	270,964	2,599,713
Utah	188,199	20,629	208,828
Vermont	180,458	19,797	200,255
Virginia	1,136,959	159,232	1,296,191
Washington	467,586	70,196	537,782
West Virginia	691,383	104,434	795,817
Wisconsin	1,015,850	144,484	1,160,334
Wyoming	152,570	12,792	165,362
Alaska	65,747	4,560	70,307
Hawaii	200,642	18,910	219,552
Puerto Rico	975,341	273,940	1,249,281
Total	37,883,411	5,277,280	43,160,691
Amount available for distribution on basis of special need	778,589	215,720	994,309
Grand total	38,662,000	5,493,000	44,155,000

TABLE 2.—*Sources of funds allotted for cooperative extension work for the year ended June 30, 1955*

Funds from within the States

TABLE 2.—*Sources of funds allotted for cooperative extension work in States, Alaska, Hawaii, and Puerto Rico, year ended June 30, 1955*

States	Grand total	Total Federal funds	Total within the States	Funds from Federal sources			Funds from within the States		
				Smith-Lever Act, as amended, June 26, 1953	Clarke-Monary forestry	Agricultural Marketing Act (title II) [1]	State and college	County	Local nonpublic sources
Alabama	$2,912,765.33	$1,452,662.57	$1,460,102.76	$1,431,452.57	$1,620	$19,590.00	$845,102.76	$615,000.00	
Arizona	500,733.94	213,961.39	286,772.55	213,961.39			238,710.15	48,062.40	
Arkansas	2,031,432.09	1,199,915.09	831,517.00	1,177,975.09	1,620	20,320.00	500,995.00	324,422.00	$6,100.00
California	4,661,654.89	929,647.74	3,732,007.15	928,027.74	1,620		2,658,394.15	1,073,613.00	
Colorado	1,231,436.89	416,623.89	814,813.00	408,779.89	1,260	6,584.00	401,625.00	413,188.00	
Connecticut	697,474.15	210,690.87	486,783.28	202,130.87	1,620	6,940.00	266,584.28	203,232.00	16,967.00
Delaware	253,257.45	117,932.45	135,325.00	106,932.45		11,000.00	128,850.00	2,000.00	4,475.00
Florida	1,716,513.32	458,394.32	1,258,119.00	447,524.32	1,620	9,250.00	738,655.00	519,464.00	
Georgia	2,973,868.90	1,507,988.90	1,465,880.00	1,496,273.90	3,240	8,475.00	763,307.00	702,573.00	
Idaho	916,473.94	320,164.11	596,309.83	317,284.11	2,880		330,659.83	245,650.00	20,000.00
Illinois	3,521,496.14	1,193,688.14	2,327,808.00	1,175,308.14	3,240	15,140.00	893,558.00	12,000.00	1,422,250.00
Indiana	2,786,056.02	991,628.02	1,794,428.00	975,649.02	1,620	14,359.00	954,565.00	781,505.00	58,358.00
Iowa	2,931,802.39	1,115,557.39	1,816,245.00	1,074,997.39	3,060	37,500.00	835,000.00	575,880.00	405,365.00
Kansas	2,900,741.62	782,578.62	2,118,163.00	756,758.62	1,620	24,200.00	524,330.00	1,567,083.00	26,750.00
Kentucky	2,504,944.58	1,405,989.55	1,098,955.03	1,388,594.55	1,620	15,775.00	681,050.00	417,305.03	600.00
Louisiana	2,717,282.59	978,768.26	1,738,514.33	937,148.26	1,620	40,000.00	1,486,079.75	237,134.58	15,300.00
Maine	565,220.96	272,502.79	292,718.17	270,029.53	1,620	853.26	199,368.17	93,350.00	
Maryland	1,457,675.79	390,045.62	1,067,630.17	362,825.62	1,620	25,600.00	867,425.17	200,205.00	
Massachusetts	1,268,572.33	299,298.10	969,274.23	277,678.10	1,620	20,000.00	378,726.00	590,548.23	
Michigan	3,489,440.50	1,135,022.90	2,354,417.60	1,062,699.57	3,240	69,083.33	1,744,968.60	575,349.00	34,100.00
Minnesota	2,104,000.45	1,039,568.94	1,064,431.51	1,027,028.94	3,240	9,300.00	457,247.00	607,184.51	
Mississippi	2,957,637.38	1,495,417.38	1,462,220.00	1,469,015.55	3,240	23,161.83	775,000.00	643,175.00	44,045.00
Missouri	2,601,935.14	1,251,688.14	1,350,247.00	1,225,823.14	1,620	24,245.00	723,900.00	460,628.57	165,718.43
Montana	985,082.96	334,766.96	650,316.00	325,656.96	1,260	7,850.00	295,323.00	354,993.00	
Nebraska	1,684,919.78	644,888.54	1,040,031.24	631,268.54	1,620	12,000.00	654,131.24	385,600.00	900.00
Nevada	280,910.38	123,706.65	157,203.73	122,506.65	1,200		78,878.23	78,325.50	
New Hampshire	461,381.55	153,580.97	307,800.58	145,425.97	1,620	6,535.00	190,570.58	117,230.00	
New Jersey	1,361,419.06	289,007.28	1,072,411.78	274,687.28	1,620	12,700.00	588,177.50	476,842.28	7,392.00
New Mexico	850,830.20	313,353.80	537,476.40	292,728.80		20,625.00	412,396.40	125,080.00	
New York	4,958,584.13	1,019,807.50	3,938,776.63	983,567.50	3,240	33,000.00	1,789,054.63	1,899,926.00	249,796.00
North Carolina	5,205,145.20	1,885,229.48	3,319,915.72	1,859,908.98	1,620	23,700.50	2,077,415.72	1,242,500.00	
North Dakota	1,008,323.97	484,711.97	523,612.00	469,691.97	1,620	13,400.00	188,000.00	335,612.00	
Ohio	2,693,250.02	1,342,579.77	1,350,670.25	1,319,429.77	1,620	21,530.00	720,284.00	591,278.50	39,107.75
Oklahoma	2,371,306.72	1,080,160.72	1,291,146.00	1,025,966.72	1,620	52,574.00	953,576.00	337,570.00	
Oregon	2,141,090.89	438,787.39	1,702,303.50	413,192.39	1,620	23,975.00	1,261,893.50	440,410.00	
Pennsylvania	2,703,282.84	1,282,077.52	1,421,205.32	1,274,497.52	1,620	5,960.00	1,091,205.32	330,000.00	
Rhode Island	198,713.38	85,847.38	112,866.00	82,535.38		3,312.00	90,369.00	19,800.00	2,697.00

See footnote at end of table, p. 910.

TABLE 2.—*Sources of funds allotted for cooperative extension work in States, Alaska, Hawaii, and Puerto Rico, for the fiscal year ending June 30, 1955*—Continued

States	Grand total	Total Federal funds	Total within the States	Funds from Federal sources			Funds from within the States		
				Smith-Lever Act, as amended, June 26, 1953	Clarke-Monary forestry	Agricultural Marketing Act (title II) [1]	State and college	County	Local nonpublic sources
South Carolina	$2,084,870.83	$1,027,102.53	$1,057,768.30	$1,022,475.03	$3,240	$1,387.50	$917,037.50	$134,250.80	$6,480.00
South Dakota	1,120,417.27	474,567.27	645,850.00	468,697.27	1,620	4,250.00	433,840.00	204,110.00	7,900.00
Tennessee	2,577,210.44	1,422,242.44	1,154,968.00	1,402,222.44	1,620	18,400.00	751,686.00	402,152.00	1,130.00
Texas	4,988,757.06	2,344,324.26	2,644,432.80	2,328,748.89	1,620	13,955.37	1,020,870.02	1,622,262.78	1,300.00
Utah	645,184.11	241,484.11	403,700.00	228,199.11	1,260	12,025.00	287,700.00	116,000.00	
Vermont	556,079.26	197,307.83	358,771.43	192,457.83	1,300	3,550.00	246,005.00	112,766.43	
Virginia	3,049,530.04	1,162,895.04	1,886,635.00	1,136,959.04	3,240	22,696.00	1,488,037.00	398,598.00	
Washington	1,539,066.94	508,143.42	1,030,923.52	497,585.92	1,620	8,937.50	580,300.00	450,623.52	
West Virginia	1,257,687.81	696,102.81	561,585.00	691,382.81	1,620	3,100.00	382,620.00	174,665.00	4,300.00
Wisconsin	2,695,928.37	1,044,090.37	1,651,838.00	1,015,850.37	3,240	25,000.00	650,789.00	1,001,049.00	
Wyoming	636,423.96	205,830.01	430,593.95	200,570.01	1,260	4,000.00	287,155.95	143,438.00	
Alaska	148,515.00	65,746.52	82,768.48	65,746.52			82,768.48		
Hawaii	589,105.21	210,642.12	378,463.09	200,642.12		10,000.00	378,463.09		
Puerto Rico	1,716,358.63	1,010,960.63	705,398.00	975,340.63	1,620	34,000.00	705,398.00		
Unallotted	280,319.55	280,319.55		280,158.84		160.71			
Regional contracts	125,000.00	125,000.00				125,000.00			
Grand total	100,617,112.35	39,675,000.02	60,942,112.33	38,662,000.02	88,000	925,000.00	35,998,046.02	22,403,035.13	2,541,031.18

[1] Preliminary distribution.

TABLE 3.—*Statement of direct payments to and contracts with States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset by States and Territories, those not requiring such offset, and basis of distribution as estimated for 1956*

Item	Total estimate, 1956	Amount to be paid without offset	Amount requiring offset and basis of allotment	
			Amount	Basis of allotment
Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the act of June 26, 1953 (Public Law 83).	$44,155,000	$14,513,808	$301,090	Specified by law.[1]
			10,663,225	Rural population.
			18,676,877	Farm population, except $994,309 [2] to be allotted by Secretary of Agriculture on basis of special needs.
Payments and contracts under sec. 204b–205 of the Agricultural Marketing Act of 1946 (7 U. S. C. 1623–1624).	1,320,000	180,000	[3] 1,140,000	
Total, direct Federal payments.	45,475,000	14,693,808	30,781,192	

[1] Sec. 3 (b), Public Law 83 provides that Puerto Rico shall be authorized to receive the total initial amount it by the provisions of the act of Oct. 26, 1949 ($101,090) and this amount shall be increased each succeeding cal year in accordance with such provisions until the total sum shall include the maximum amount 01,090) set by the provisions of the act of Oct. 26, 1949. Under the 1956 budget estimate $301,090 will be id to Puerto Rico under this provision.

[2] Of the $994,309 for special needs, $500,000 was authorized under the Bankhead-Jones Act, sec. 23, for tment to the States and the Territory of Hawaii on the basis of special needs due to population characteristics, area in relation to farm population, or other special problems, as determined by the Secretary. This vision was retained in sec. 3 (b) of the Smith-Lever Act, as amended. Also under sec. 3 (c) 1 of the Smith-ver Act, as amended, 4 percent of any amount appropriated pursuant to this section is allotted to the tes, Hawaii, Alaska, and Puerto Rico on the basis of special needs as determined by the Secretary. his amount will be $494,309 under the proposed budget for 1956.

[3] Distribution to States based on annually approved cooperative projects for marketing service and gional marketing contracts.

TABLE 4.—*Extension field agents employed June 30, 1951, 1952, 1953, and 1954*

	June 30, 1951	June 30, 1952	June 30, 1953	June 30, 1954
State supervisors	784	788	787	797
Subject-matter specialists:				
Full-time specialists	1,697	1,694	1,709	1,736
Part-time specialists	551	512	486	520
Total specialists	2,248	2,206	2,195	2,256
Total with headquarters at colleges	3,032	2,994	2,982	3,053
County workers:				
Agricultural agents	4,910	4,866	4,940	5,012
Home demonstration agents	3,261	3,285	3,290	3,288
Boys' and girls' club agents [1]	652	645	617	560
Negro extension agents	787	803	795	804
Total county workers	9,610	9,599	9,642	9,664
Total	12,642	12,593	12,624	12,717

Number of agricultural counties in the States, Hawaii, Alaska, and Puerto Rico 3,109
Number of agricultural counties now having 1 or more agents 3,062

[1] These are special 4-H Club workers. In the majority of States, Alaska, Hawaii, and Puerto Rico, 4-H Club work is conducted by county and home demonstration agents and their assistants.

General Statement

Mr. Whitten. We will be glad to have your statement, Mr. Secretary.

Secretary Peterson. Thank you, Mr. Chairman.

Mr. Chairman and gentlemen, I appreciate this opportunity to appear before you. It is a pleasure to discuss the work of the Coopera-

tive Extension Service of the States, Territories, and the Department of Agriculture. We consider this cooperative effort one of the most important activities engaged in by the Department of Agriculture.

In my native State of Oregon, for instance, I am quite familiar with the deep appreciation that farm people have for the educational assistance provided by the extension staff. It is gratifying to know that this great appreciation for the work of the Cooperative Extension Service is general throughout the country.

In recommending better farm and home practices to farm people, extension workers include in their activities educational support to the programs of the Agricultural Research Service, the Soil Conservation Service, the Agricultural Marketing Service, and many other USDA and State agencies. Thus, farm people are provided with accurate information necessary to economic and social growth that cannot be measured alone in dollar benefits. From my observation and actual experience as State director of agriculture, I am confident that the investment in extension education pays dividends greatly in excess of its cost.

Extension work is a cooperative undertaking sponsored and operated jointly by county, State, and Federal governments through their delegated representatives. Not only are all levels of government involved in its operation, but they are also involved in financing the work. It is truly a cooperative effort.

The Cooperative Extension Service is the educational arm of the Department of Agriculture. This is a great responsibility because much research work is conducted directly by the Department in addition to that done in cooperation with land-grant institutions and other agencies. This research has application in many States. We look to the Extension Service to take the results of this research to farm people, marketing agencies, and even to suburban and urban people who request it, in a way that they can readily apply it.

It profits the farmer or the country little for the Department, the colleges, or others to do good research unless the results are taken to farm people in such a way that they can apply them.

The Department is authorized to carry out many programs designed to improve agriculture. It depends upon the Extension Service to explain the provisions of these programs to farm people and help them make the maximum use of them. Farm people look to extension workers to inform them of changes in farm programs such as acreage allotments, marketing quotas, changes from year to year in the agricultural conservation program practices and requirements, and the services available through Soil Conservation Service and Farmers' Home Administration. Farmers ask for assistance in organizing for rural telephone service or such activities as a grasshopper control program, a new marketing agreement, or an intensified brucellosis eradication program. County agents assist with drought and other emergency programs. All this is a necessary part of the responsibility for educational leadership. When added to the primary extension function of assisting farm families apply the results of research and advancing technology, it is apparent that the Extension Service needs further strengthening if it is to do adequately the job expected of it by farm people.

The Department is recommending a further increase in Federal appropriations of $5,800,000 for cooperative extension work. This in-

ludes the recommended increase in appropriations under the Smith-Lever law as amended and also the work to be conducted under the Agricultural Marketing Act of 1946.

This we feel is the minimum increase that should be provided to further support and expand the work that the Extension Service is being asked to perform.

The working relationship of the Department and land-grant colleges in the conduct of cooperative extension work has through the years been excellent. The Department and the colleges are operating in accordance with a memorandum of understanding signed in 1914. A joint committee recently agreed to a modernization and strengthening of that working agreement. The Department and the Association of Land-Grant Colleges have approved the revision of this memorandum of understanding. It has now been submitted to all land-grant colleges for action. In this memorandum—

> the Department agrees to conduct through the land-grant colleges all educational work that the Department is authorized to carry on in the State, including that covered by the Smith-Lever Act and other programs which are primarily educational.

The memorandum also provides for land-grant college acceptance of that responsibility.

The Federal Extension Service, as an integral part of the Department of Agriculture, has responsibility for providing leadership in all educational programs under the jurisdiction of the Department. The Federal Extension Service is responsible for the administration of the Smith-Lever Act and for providing program leadership and coordination of extension work in the States and Territories.

The Department is authorized to provide many programs and services which must be explained to farm people if they are to take advantage of them. These include agricultural adjustment, conservation assistance, water facilities, rural telephone, pest control, and many others. The operating phases of these programs and services are the responsibility of several agencies of the Department. It is the responsibility of the Federal Extension Service to coordinate the educational phases of these programs and services within the Department, as well as through the State extension services.

Mr. Ferguson is here with me. He has been intimately associated with extension work and in its administration. He will be glad to discuss with you in more detail the work of both his immediate office and the work in the States.

Mr. WHITTEN. Do you have a general statement, Mr. Ferguson?

Mr. FERGUSON. Yes, I have, Mr. Chairman.

Mr. WHITTEN. We would be glad to have it.

EDUCATIONAL ASSISTANCE TO FARM FAMILIES

Mr. FERGUSON. Gentlemen, it is a pleasure for me to appear again before this committee to report the progress the Extension Service is making in meeting the demands of farm families for educational assistance.

Last year we discussed with you the many problems facing farm people and the role of the Federal-State extension team in bringing into focus the solution to many of these problems. We pointed out the gap between the findings of research and their application; the

greater risk and higher investment involved in farming today; t need for a method of teaching which would put the pieces of scienti information together in a way that would insure an economical sound farm operation; the marketing problems which occur beyo the farm; the need for better preparation of beginning farmers f farm management; and for a better understanding by farmers of t off-farm forces affecting their business.

Last year it was indicated that at least 85 percent of the fun would be used to add county personnel. Actually 89 percent of t funds have been used for this purpose. State reports as of Januar 15, 1955, indicates that they have already employed approximate 1,000 new workers to provide farm families with more intensive ed cational assistance.

Counties employing additional extension agents have expresse appreciation for being able to participate and help provide th greater service. Ritchie County, W. Va., reported:

> Ritchie County is extremely fortunate in being 1 of only 8 West Virgini counties which are initially included in the program, which is not a temporar function, but will become a permanent part of our local Extension Services.
>
> We are impressed by the farm and home unit program and can see in it grea possibilities which could result in direct increases in farm income through helpfu counseling.
>
> It is easily recognized that with wartime economy out of the picture, and with resultant drop in many farm prices, and surpluses in many farm products, that farm families in areas like Ritchie County are to continue to develop toward better standard of living, there must be a better understanding of their entir farm potential, and a new emphasis must be given to management on the farm

In South Dakota, the county agent in Roberts County sent out letter with a brief note about the farm and home unit approach. It is significant that 450 of our 1,500 farms expressed interest in the farm and home unit program.

EXTENSION PROGRAM FOR 1956

The plan for extension work in fiscal year 1956 is basically a continuation and expansion of the program emphasized in 1955. Additional manpower is needed to get research results quickly to more farmers and in more widespread use on individual farms. Particular attention needs to be given to beginning farms and those in low income areas. Through more direct contacts this increased staff will bring to more farm people the technical, economic, and farm program information requested. Additional farm families will be assisted to think through and make changes in the organization and operation of their farm businesses, to make production adjustments in line with market demand, and to apply sound technology to the operations of their farms.

More leadership and training will be provided for boys and girls through 4–H Club work. This training supplements the basic education of the schools. It is not a substitute. It is the first introduction of many young people to the science of agriculture and home economics. It also helps them to grow in ability to cope with responsibilities in whatever walk of life they choose.

With the staff now available, each county agricultural agent is called upon to assist over 1,000 farm families. This number is too large to permit much on-farm educational assistance in solving the problems of today's complex highly competitive agriculture.

The additional funds requested will be used largely for assistant gents, with such additional supervision, training, and technical idance as is necessary to make the program most effective.

PROGRAM RESULTS

Last year we presented the results of a study of what happens when dividual educational assistance is provided farm families by review- g work conducted in Vermont. Today we would like to review veral additional examples of accomplishments.

Here is what happened in one North Carolina county where four Extension agents gave intensive on-the-farm assistance.

In 1940 Clay County, N. C., was known as a "poor mountain county." There were 370 families on public-welfare rolls. Its churches, schools, roads, and other community facilities were in the state of repair that a per-farm cash income of $92 a year would suggest. Total cash income from its 1,097 farms was a meager $100,924. Only 74 farms had electricity. There were a total of 30 trucks, 12 tractors, and 145 automobiles.

Today Clay County still has its mountains. It still has its people. But otherwise it bears little resemblance to Clay County in 1940. The average income per farm was $1,870 in 1953. This was due to a shift in production to include hatching eggs and milk.

In 1953 Clay County averaged 32 bushels of corn per acre, as contrasted with 18 bushels in 1940. Farmers reduced grain acreage 50 percent by discontinuing these crops on poor, unsuited land. These acres were planted to sod crops for hay and pasture.

Today 98 percent of all farm homes have electricity. Mechanical refrigerators increased from 55 in 1940 to 660 in 1953. Homes with running water went from 92 to 630; those with bath rose from 36 to 293. Thirty-two churches were either rebuilt or remodeled during the past 13 years.

Young people are staying on the farm there because now they have a way to make a living on the land.

In 1941 Clay County was considered North Carolina's No. 1 problem county, agriculturally. The State Extension Service director decided to make Clay a pilot county—to see what an adequate number of Extension workers can do in a county that had at that time only a county agent and a home agent. Two additional experienced workers—one man and one woman—were put to work in Clay County. These agents used the "family approach," maintaining a close personal contact with the families.

The approach to Clay County's problems was agreed upon jointly by farm and Extension people. The farm families in each of the county's 13 communities were assisted individually and in community groups. During World War II much of the effort centered on improving the soil, producing more adequate supplies of food for home use, and wartime activities. During this period income was not a major problem because of outside income from family members in the armed services or defense plants.

In 1946 farm people and Extension workers began intensive studies to appraise situations on individual farms, marketing possibilities, and ways to increase income. The studies indicated that intensive dairy, poultry, and vegetable production offered greatest opportu-

nities. On this basis, the agents began their farm unit work which featured these points:

1. The farm and home were treated as a unit. Better living as well as better farming was stressed.

2. The agents worked closely with individual families and small groups of families.

3. Agents and farm leaders worked vigorously to develop and expand markets for farm products.

In spite of the progress made in Clay County, much still needs to be done to further increase farm income and improve farm living conditions for all the people in the county.

COOPERATION WITH OTHER AGENCIES

The Extension Service does not attempt to do the job alone. The educational work is conducted in cooperation with other USDA agencies and is coordinated with the programs for which they are responsible. To illustrate the tie-in with other agencies, let me cite an experience in Lee County, Miss. Two years ago 50 farm families in the county made an intensive effort to improve their farms and homes. The assistance of an additional Extension agent was provided.

The first step in the program was the preparation of a land-use plan. The SCS work unit conservationist assisted with this part of the work, encouraging farmers to make full use of the agricultural conservation program payments and other financial help.

Members of the group keep accurate records of their farming operations, reviewing their records and plans each year, and making revisions as necessary. The results in terms of increased income have convinced the families that careful farm management pays.

This kind of farmer participation in planned action has helped make all the farms more diversified and better able to adjust to cotton acreage allotments.

MARKETING EDUCATIONAL WORK

To continue to improve the Nation's standard of living and the welfare of farm people we all recognize that our resources must be utilized more efficiently. I think we all realize, too, that efficient production is not enough. There are many acute problems in the food marketing field. An increase of $395,000 is requested to further expand marketing educational work.

Output per man-hour in marketing food products has increased only 30 to 40 percent since 1935–39, compared with about a 100 percent increase in farm production per man-hour. That, we believe, points to a significant area requiring additional attention.

It emphasizes the need to further expand extension educational work in marketing. Research is developing improved marketing methods which can reduce costs and waste, when applied in the marketing field. Since 1929, the number of workers engaged in marketing food products alone has increased by approximately 44 percent. An expanded extension educational program is essential to get the results of research effectively applied by the 1 million firms engaged in marketing farm products.

Experience has shown that extension work directed at increasing efficiency and reducing waste in assembling, processing, distributing,

nd utilizing agricultural products offers an opportunity for improvement as great as that achieved in the field of production.

A recent study estimated that losses occurring in the marketing of eaches in the United States amount to approximately $6,000,000 nnually. Research shows that if field heat is removed from the ruit within a few hours after picking, the ripening process is retarded or 3 or 4 additional days. This would permit peaches to be marketed t a more advanced stage of maturity. The rapid removal of field eat controls and retards rot. In 1952, two hydrocoolers were used y the Extension Service for demonstrating the precooling of peaches South Carolina. As a result of an intensive educational program ith growers, market organizations, and shippers, there were 24 ydrocoolers operating in South Carolina during 1954. According to survey over 3,000 of the 4,700 cars of peaches shipped out of South arolina in 1954 were hydrocooled. It is estimated that growers' ncomes were increased by more than $300,000 for their peaches due o hydrocooling.

Throughout the major hog-producing areas an intensive educational rogram is being carried out with producers, buyers, and packers.

Iowa, Pennsylvania, Ohio, Indiana, South Dakota, Maryland, irginia, North and South Carolina, Tennessee, and Mississippi all ave marketing specialists working in this field. In one of these States, Extension Service specialists conducted educational demonstrations for producers, market personnel, county agents, and Smith-Hughes teachers, in which 167,332 hogs were graded. As a result of his educational work, 52 different pork packers now use price differentials to encourage producer sorting for market and increased use of eat-type breeding stock.

The immediate objective of the program is to improve market hogs y one grade. This means trading 3 percent less fat for lard worth 3 cents for 3 percent more lean meat worth 45 cents per pound. The difference in value of live hogs marketed in 1954 would have amounted o an increase of over $100 million.

CONSUMER EDUCATION PROGRAMS

The Extension Service is conducting consumer education programs n food marketing in 29 cities, and on a statewide basis in 16 States. These programs are attempting to increase buying by pointing out good buys thus stimulating demand when the supply of agricultural products is large; stimulating demand for the right kinds of food from the standpoint of good nutrition; developing an appreciation of quality products and their proper care and use. These programs are also designed to bring to consumers an understanding of the items which make up the price spread between the farm and the retail store.

The need for greater understanding of meat products on the part of consumers was pointed up recently in a survey of 1,200 Oregon women. This survey showed that less than one-half of them could identify meat cuts, or knew when the various meats are available in largest quantity, or could judge the quality of meat.

Studies have also shown consumers who understand seasonal variations in production and the problems of producing food in sufficient quantity to meet their needs are more likely to adjust their consumption patterns to utilize food in abundant supply. This helps to reduce or eliminate critical periods of oversupply and depressed prices.

Measurements of the type of marketing information desired, th most effective means of disseminating this information, and the exte to which it is being used are also being undertaken. A study of 5 consumers in the city of Louisville, Ky., has just been completed whi will serve as a guide for further programing.

Following are illustrations of the type of extension marketing activ ties being carried out. From the Boston office, weekly food inform tion bulletins are sent to 3,000 professional leaders. The woman editor for the Boston Post wrote:

> We use the information each week in a "Let's Go Marketing" column * * Our circulation is 297,412. We find the Food Marketing Bulletin very helpful.

The New York City office distributes a weekly release to 515 foo buyers of small institutions. Based on a questionnaire sent to thes institutions, about 75 percent reported they used the informatio effectively, resulting in improved diets at no additional cost.

Special releases have been prepared in Ogden, Utah, for use b families in low-income housing units.

FEDERAL EXTENSION LEADERSHIP

The revised memorandum of understanding between the Depart ment and land-grant colleges defines more clearly the working relation ship between the partners in the conduct of cooperative extensio work. As indicated by this memorandum, the State extension serv ices look to the Federal Extension Service for leadership and progra assistance to maintain a modern up-to-date service with nationa continuity.

During the past year the Federal partner of the Cooperative Exte sion Service has intensified its effort to give assistance, counsel, an guidance to the extension services of the land-grant colleges. Through conferences, workshops, and direct help to individual States, member of the Federal Extension Service are assisting States and counties i developing programs and improved educational procedures an methods.

The staff has been realined and is being strengthened with peopl of proven competence in extension education. This assistance i geared to the needs expressed by joint committees of Federal an State staff workers.

Under the direction of an assistant in program development, tas forces are working out objectives, procedures, and methods whic involved all Extension workers concerned in providing a unified tea approach to the job. These task forces are providing more assistanc in line with requests from the States and the problems needing atten tion.

A more effective liaison with other agencies of the Department i being developed to enable Extension to better perform its duties a the educational arm of the Department. This includes, among other responsibilities, taking to the people, through State and county Extension workers, educational programs which will acquaint them with the various farm programs, their operations and application to individual farm situations.

More direct working relationships are being developed with the personnel of the Agricultural Research Service to establish a more effective two-way communication between the research worker as he

eks facts, and the Extension worker as he puts these facts into the nds of farmers, homemakers, and businessmen.

The 4–H Club staff has been strengthened and its work developed give the States more assistance in conducting educational programs ith rural boys and girls. Our home economic staff is likewise proiding expanded service to the States in building effective programs ith rural homemakers.

As the educational assistance of the Cooperative Extension Service oves forward, it is imperative that careful attention be given to the ffectiveness of the work and to how it may be made most productive. he Cooperative Extension Service is a public agency and as such ust in the public interest continually appraise the effectiveness of its ork. This kind of evaluation is being strengthened to provide leaderip and assist the States in developing studies which will measure the ffectiveness of Extension work. Demonstrations and trial procedures n new Extension methods are being conducted to insure that the work ill be up to date and effective.

The States are also requesting assistance from the Federal Extension ervice in administrative and personnel management. The staff as been strengthened to provide training in this area to State adminstrative personnel.

The Cooperative Extension Service is fully aware of its increased esponsibility and is moving forward to help farm people solve the omplex problems with which they are faced. We look forward to eing able to give greater service in the year ahead.

Mr. WHITTEN. Mr. Ferguson, I want at the outset to say that our statement is of interest. In my years of service on this committee, I have not known of a single member who did not have high egard for the Extension Service. When I was chairman of this committee before, I urged the Department officials to prepare a bill o raise the ceiling on the amount of funds that could be made available y the Federal Government to meet this problem. That bill was ntroduced, and later passed.

I wish the record to show that we today are very much interested n the Extension Service, and recognize its value.

QUESTION OF SIZE OF BUDGET FOR 1956

I would like to say, however, that we on this committee have uite a problem. The Extension Service was granted something in xcess of $7 million last year in the way of an increase. This year he Bureau of the Budget has granted you a further increase. That ame budget reduces the funds for disease and pest control. It educes the appropriation for flood prevention. It reduces the ppropriation for marketing services. It reduces the school-lunch rogram by $15 million. It reduces the loans through the Farmers' Home Administration by $6 million.

While we value the Extension Service, we on this committee recogize that in the field of agriculture that there are many other valuable rograms. Each person that we face seems to feel—and I guess that s properly so—that his work is the most important. Thus, when we et letters—and we get thousands of them from over the country—hichever program comes closest to the individual writing, that is the gency that he has the greatest feeling for.

On this committee we have got to go along with the cuts, or w
have to deny increases, or we have to exceed the President's budge
for the Department of Agriculture. It is a difficult situation becaus
we believe in all these activities.

Briefly, for the record, the testimony will show that we have a gre
program of research. The Federal Government spends some 50 or 6
million dollars annually in the field of agricultural research—abou
$35 million of it through the Agricultural Research Administratio
Some of it is in payments to States for further experimentation.

After the research findings are made we have several means o
getting that information to the people. One of them is that th
Members of Congress have allotted to them for use by the farme
back home, quite a large number of bulletins and pamphlets an
reports on the results of the various experimentations. To m
knowledge, there is not a single Member of Congress from a far
district who does not annually send out to all the people in his distric
a list of the various bulletins and reports and requests that farmer, t
advise what ones of those bulletins or pamphlets he would desir
That is one means of distribution.

Now, the Extension Service has a tremendous means of distribu
ing, still again, findings of the various research agencies and the Sta
experiment stations.

We find that in the scheme of things the extension department
not a part of the Department of Agriculture, in that it is not unde
the jurisdiction of the Department of Agriculture, but is tied with th
land-grant colleges. What it does so far as carrying out the will o
the Department of Agriculture is done under a contract, or agree
ment, between the Department of Agricultu and the land-gra
colleges.

Now, we have on the one hand this great field of research, and w
have tried to develop it. Then we have the Extension Service which
according to my knowledge through the year, is the information
service. It is its job to make available to the people the results o
the experimentation and research that the Department does.

What is very important, I think, and what the Department ha
heretofore thought, is that in addition to finding the answers and mak
ing them available to the people, we have what we call the actio
programs. I think history will show, the American people being lik
they are, that while knowing the answer is enough with lots of them
it is not enough, judged by results with lots of others. Thus it
that we have the action programs.

We have as a part of the Agriculture Department, the Soil Con
servation Service. In various areas of the country they are organize
into soil conservation districts. The Federal Government provide
soil conservation technicians whose job it is to help with farm planni
soil surveys, and things of that sort, in connection with the use o
these research findings.

In addition to soil conservation service, we have the ACP progra
whereby the Federal Government will pay a part of the cost of certai
selected soil-conservation practices. In addition to those two, w
have the Farmers Home Administration, to help those farmers wh
are in the lower income bracket, and who have such a tremendou
job of trying to get rehabilitated.

Now, in trying to meet this problem, and in asking my questions, I run the risk of being misunderstood. But the problems before us, as I see it, in view of the President's budget this year and last year, is whether or not it is sound in the viewpoint of this committee to cut down the action programs and give the money thus saved to the Extension Service to further disseminate the results of research and experimentation.

That is the issue before us. Personally, I think each service should go on its own relative merits.

You have made, Mr. Ferguson, a very informative presentation to the committee. I would point out 2 or 3 things in it that a person might wonder about. I am sure that you wouldn't claim that the Extension Service was responsible for the improvement in Clay County, N. C., or Ritchie County, W. Va. That has been a general improvement. Far be it from me to take any credit away from the Extension Service; I know they have played their part in it. But I would also suggest that the Soil Conservation Service, the Forest Service, and the various other action programs of the Department of Agriculture, have played their part, too. If this administration plans to turn the action programs over to the Extension Service, they will have to change the law, because the Extension is the information service. It is not a Soil Conservation Service, and neither is it a Farmers' Home Administration. But the reports that we have from the regular investigators of the committee on these kinds of programs would indicate that, under the funds you got last year, you are moving into the field of taking over the responsibilities of some of these other services. Your own statement says that you have assigned to those agents approximately 50 families. I will read from your statement, on page 5, where you say:

> The farm and home are treated as a unit. Better living as well as better farming was stressed. The agents worked individually with individual families and small groups of families. Agents and farm leaders worked vigorously to develop and expand markets for farm products.

Judged from one standpoint, that is the direction the agent should go, but judged from another standpoint, that is at least a part of what these other organizations do.

Now, in Lee County, Miss., I am sure there have been tremendous improvements where you put an agent to work with 50 farm families. I am sure that could be a real benefit.

But the point I make is, where does this lead? How many agents have you put on in the United States this year under your new funds.

Mr. FERGUSON. Approximately a thousand new agents.

CONTRIBUTIONS BY STATES

Mr. WHITTEN. With regard to those agents, was there any contribution toward their pay by the counties or the States?

Mr. FERGUSON. Yes.

Mr. WHITTEN. Approximately how much? Is that in addition to what has been made available theretofore?

Mr. FERGUSON. Mr. Schruben do you have the figure on contribution of States? Do you have the exact figure?

Mr. SCHRUBEN. I can get it for you right here.

It is $3,574,140.

Mr. WHITTEN. That is additional money that the States made available?

Mr. SCHRUBEN. Yes. States and counties.

Mr. WHITTEN. Did you have any yardstick or any requirement that, in order to set up one of these experimental counties, there should be a contribution by the State and county?

Mr. FERGUSON. No specific requirement. That was left entirely to the States because each State has a different arrangement under which it works with the counties.

Mr. WHITTEN. Did you require any contribution to these various counties by the State before you make these funds available to them?

Mr. FERGUSON. Any contribution—by counties to the State?

Mr. WHITTEN. Yes. As this extra money provided last year was divided out, before you approved the use of those funds by the States in a particular county, did you require that the State add to the money given to that county? In other words, when this got to the State did you require any matching by the State before you approved its use on this experimental county basis?

Mr. FERGUSON. These funds all had to be matched by State funds.

Mr. WHITTEN. The additional $7 million had to be met by new funds?

Mr. FERGUSON. No, not necessarily new funds, but they had to have matching funds, funds that were not then used for matching purposes.

Mr. WHITTEN. As long as the State was putting up half of it, there were no strings on payment to States?

Mr. FERGUSON. If they had funds from within the State that they were not using for matching, they could use such funds for matching. The States and counties are now providing more than 60 percent of the total funds available for extension work.

Mr. WHITTEN. Is there any State that didn't have an excess fund over and above half, so that they, in effect, could not get this payment without putting up any additional money?

Mr. FERGUSON. No. All the States had matching funds.

Mr. WHITTEN. So it amounted to a Federal payment which you prorated out without exception to the States; is that correct?

Mr. FERGUSON. That is right.

Mr. WHITTEN. Do you have any control at the Washington level as to what use the States make of these funds that you allocated to them.

Mr. FERGUSON. The control we have is through council and conferences with the States as to what their needs are. The Smith-Lever law provides that funds shall be allotted to the States on the basis of a formula and shall be expended on mutually agreed upon projects, plans of work and a detailed budget, all of which are agreed upon prior to the beginning of the fiscal year.

The States are also required to submit for each agent a report of accomplishments. Within this framework the States have a great deal of latitude, and leeway, in how to use the funds.

USE OF FUNDS FOR EXPERIMENTAL COUNTIES

Mr. WHITTEN. You used lots of these funds for this so-called experimental county basis in the various States, did you not?

Mr. FERGUSON. No. Only four States are using this method. Only a part of the funds available to these States are being used in the demonstration counties.

Mr. WHITTEN. How many counties are in that category, and what did you set up in each of those counties?

Mr. FERGUSON. North and South Carolina, Mississippi, and Georgia, were the four States that set up experimental counties.

Mr. WHITTEN. How many agents did they give to those experimental counties, and how many counties in each State?

Mr. FERGUSON. Mr. Schruben, do you have a record of how many counties there were?

Mr. SCHRUBEN. In Georgia, there were five counties.

Mr. WHITTEN. In those five counties, did you require any county contribution to the experimental plan?

Mr. SCHRUBEN. The State did require it.

Mr. WHITTEN. Matching funds by the county?

Mr. SCHRUBEN. By the county.

Mr. WHITTEN. How many additional agents were provided in those five counties?

Mr. SCHRUBEN. Let me give you the specific counties involved.

Whitfield County, four additional agents were employed. You understand there were several counties where only one assistant agent was employed.

Mr. WHITTEN. I am not talking about your experimental counties.

Mr. SCHRUBEN. Polk County, three additional agents were employed. In Washington County, four additional agents. That includes both Negro and white. In Colquitt County, five additional agents were employed, and in Tatnell County, four additional agents. I believe that makes 5 counties.

Mr. WHITTEN. Yes.

AFFECT ON OTHER AGENCIES OF EXPANDED EXTENSION SERVICE

What is the basis for feeling that you are still just the informational service? In other words, if the Extension isn't going to take over the action work of the Soil Conservation Service, if it isn't going to take over the work of the Farmers' Home Administration, if it isn't going to supplant the A. C. P. County Committee, what is the basis for saying that it takes 4 or 5 agents in a county to just disseminate information, Mr. Ferguson?

Mr. FERGUSON. The law says to aid in diffusing useful and practical information and to encourage the application of the same through demonstrations, publications, and otherwise.

Mr. WHITTEN. I'm sure that in those 5 counties those extra agents have done some good. I am trying to get to the question of whether we should cut down Soil Conservation Service and whether we should cut down school lunch and these other agencies, so as to spread that approach to various other counties.

Mr. FERGUSON. In the first place, the Extension Service is not doing the work of the Soil Conservation Service. As a matter of fact, in most of these States, and I would say Georgia would be one very good example of it, there is the closest possible kind of cooperation between the Soil Conservation Service and the Extension Service. The Soil Conservation Service is concerned primarily with

assisting people by giving them technical help in land and water management. The Extension Service is concerned with the application of technology, and the application of management, to those farms in order that they may be successful, going economic units.

Mr. WHITTEN. It may be that the county Extension agents will have to take over the soil conservation job, because with 58 new soil conservation districts coming into existence, the budget doesn't give them any money for new soil conservationists, although it gives this $5 million extra to the Extension Service. So whether you intend to take it over or not, if this budget approach last year and this year of constantly cutting down Soil Conservation Service and constantly increasing your funds, you may have to step in and do it.

We may be dependent on you because of the budget action, even though you don't intend that.

Mr. FERGUSON. It is certainly not our intent to tackle that particular job, Mr. Whitten. We need the cooperation of the Soil Conservation Service and Farmers' Home Administration as they need the cooperation of the Extension Service.

Mr. WHITTEN. Do you think it helps any for them to read the President's budget and see that money which heretofore has gone to them under the present budget will be given as an increase to your agencies?

Mr. FERGUSON. At the county level, we need the assistance of those agencies in giving support to educational programs.

Mr. WHITTEN. There is testimony here that there are some 58 new conservation districts and not a dollar provided for new personnel. Soil conservation funds are reduced and yet they have to service these new districts.

If this experimental basis of five county agents per county proves to be effective, how far are you going in requesting funds to give that same five county agents to every county in the United States? Do you realize that would run up to possibly 100,000 county extension agents in the United States? Where are you going to draw the line?

Mr. FERGUSON. One hundred thousand is most unrealistic. Five additional workers in many counties would not be needed.

Mr. WHITTEN. If these five counties prove to be successful, isn't there going to be a drive to give the same thing to those other counties?

Mr. FERGUSON. Those are counties with very high rural and farm population. Referring to Clay County, N. C., during most of the time covered by our report there was no other Department of Agriculture agency located in the county.

Mr. WHITTEN. You were talking about what it was in 1940. Then you showed how good it was by 1953, and you didn't have any additional agents by then. You got your increase in funds subsequent to that date, so what you are doing is proving what a wonderful job the Extension Service did without the new money and without having to put five agents to a county.

Mr. SCHRUBEN. Two additional agents that went into Clay County, N. C., went in through funds made available from TVA.

Mr. FERGUSON. I don't know what the maximum or optimum workload would be, Mr. Whitten. It would vary, from State to State and county to county and with the kind of problems that exist in those States. Some of those States in that particular area have some very difficult problems, as you know.

Mr. WHITTEN. I am sure of it. We have some in my State. It is just a question of how far can we go in meeting that need. And once we decide that, shall we operate through these several agencies with each having its place, or shall we cut the others and handle it through your organization?

Mr. FERGUSON. Your question is very well taken. The maximum load will be determined to some degree by the process of experimentation that we are doing at the present time. We are working with the States on evaluating the results of these efforts. After we have made some of those studies, Mr. Whitten, we will be in much better position to answer your question than we are at the present time. Any answer we gave you today would have to be at best somewhat of an estimate.

Mr. WHITTEN. Now that being true, don't you think this committee should give you the same money for the coming fiscal year that you had this year? Don't you think we should refuse to do as the President's budget requests, take this money away from these other folks and give it to you, until we can have a report on just what you found out from this increase this year?

STATE REQUESTS REFLECTED IN BUDGET INCREASE

Mr. FERGUSON. We are attempting here to reflect the requests as the States have given them to us, the demands as they reflect them, of the various farm groups and organizations for an adequate educational job, in light of the many, many complex problems that farmers and farm families are facing at the present time.

Mr. WHITTEN. As a matter of fact, didn't these requests for increases originate at the land-grant colleges and here in Washington, rather than at the county level?

Mr. FERGUSON. The requests reflect the demands made on the colleges by counties for new personnel.

One of our directors said he had 24 counties in his State that were hounding him for additional assistance. That reflects the feeling of the farmers in these counties. That need is reflected from county requests through the directors of the extension. They in turn reflect it through their committees to the Department.

USE OF 1955 FUNDS

Mr. WHITTEN. In connection with one of the regular investigations which the Appropriations Committee has made, the investigators went into Texas during the time that the request for the increase last year was considered. They were advised in talking to people in the Extension Service that they didn't know that the money was going to be made available.

The statement was made that they understood the Secretary had a bluebook in which there were some good things that they could use the money for if it went out to Texas. They made the further statement that they thought they could use these extra funds for the Extension Service to educate the people of Texas on foreign affairs.

That was at the time that this request for additional funds last year was being made. This report also states:

On the basis of explanation contained in explanatory notes and discussion with the Extension Service personnel in various States it was apparent that the ulti-

mate goal is the assignment of 50 farm units to each county agent to the point of saturation; 5 million farm units throughout the country would call for employment of about 100,000 agents and 50,000 home-demonstration agents.

Mr. FERGUSON. Could I comment on that statement?

Mr. WHITTEN. Yes. I would like to have it.

Mr. FERGUSON. First, I don't know where the impression would get abroad that we were contemplating 150,000 extension agents or that any of these funds would be used for foreign aid, Mr. Whitten.

Mr. WHITTEN. That wasn't an impression. This is a statement of Extension people in Texas who didn't know you were trying to get additional money up here.

Mr. FERGUSON. I can't imagine how they would get the impression.

Mr. WHITTEN. They were saying at the local level that they thought that would be a good use for more money if they could get it.

Mr. FERGUSON. I can understand that they may have felt that there was need for the farm people of Texas to know more about foreign trade and foreign trade policy, but I am quite at a loss to understand why they would feel any of these funds would be used for foreign aid.

Mr. WHITTEN. Well, you are the educational service, and this was information he thought would be helpful to people around him.

Mr. FERGUSON. I am at a loss to understand that.

Mr. WHITTEN. The investigators also found in certain States that the Extension Service had obtained a list of borrowers from the Farmers' Home Administration and had apparently started a planning program. It was claimed—and the claim appeared to be justified—that the Extension Service had chosen these particular farm units because of the advance planning already accomplished by the Farmers' Home Administration, which would make the whole thing much more dramatic.

Mr. FERGUSON. This is the first time I have heard of that.

Mr. SCHRUBEN. We would be very much interested in getting more details on that. If that is generally true it should be followed up.

Mr. WHITTEN. I don't know that it is generally true.

Mr. SCHRUBEN. Specifically true.

Mr. WHITTEN. They were investigators of the Congress, which regularly check on Department of Agriculture operations.

Mr. SCHRUBEN. Wouldn't you think it should be followed up in terms of straightening it out?

Mr. WHITTEN. I am trying to follow it up a little right now. I think we should call on you to follow it up.

Mr. SCHRUBEN. If you would give us the specific details, we would be glad to follow it up.

Mr. WHITTEN. We will provide such details as we have. These are conclusions of people who went to find out the story.

ASSIGNMENT OF FIELD PERSONNEL TO SPECIFIC NUMBER OF FAMILIES

Another finding they have come back with, is that in many places your own Extension people don't like this new approach, so to speak, of being assigned a certain group of families, somewhat on the order of the Farmers' Home Administration agent. They have pointed out that the Extension Service people wanted to limit their activities to those of an educational nature, and they did not want to in any instance become an action agency engaged in direct service to the individual.

Some of them thought this New Look of assigning to them a specific number of families by name amounted to giving them supervision along the line that the Farmers' Home Administration now gives.

Secretary PETERSON. That certainly isn't a policy we are attempting to pursue. In connection with Extension, it must certainly use mass media.

LACK OF COOPERATION OF FIELD PERSONNEL

Mr. WHITTEN. The report also states:

> In another State some Extension personnel went far beyond reasonable limits in their attack on both personnel and the program of the agencies. Instances were noted of some lack of positive interest on the part of the State Extension Service office to accomplish cooperative relationships.
>
> This attitude made it increasingly difficult to establish good relations at the county level. For example, in one State it was found that when all of the other agricultural agencies' representatives unanimously agreed on a particular approach to the drought-emergency situation, the Extension Service representatives at the meeting walked out. It was learned that this petulant attitude on the part of the State Extension Service was not unusual and that in this instance, as in others, the Extension Service did not subsequently cooperate because it did not have its way in the first instance.

INDEPENDENT STATUS OF EXTENSION SERVICE

The point is that, if you were to shift the Farmers' Home Administration and Soil Conservation to the Extension Service, you then would be transferring that to an independent agency, independent of the Department of Agriculture; wouldn't you?

Mr. FERGUSON. May I comment on that?

Mr. WHITTEN. I would like for you to answer my question, then I would be glad to have your comment. The Extension Service is independent of the Department of Agriculture and operates only in line with agreements with the Department?

Mr. FERGUSON. We have memoranda of understanding with the colleges.

Mr. WHITTEN. Is there any way for the Department of Agriculture to make them do anything that hasn't been agreed on in that agreement?

Mr. FERGUSON. All the funds the States expend are spent in accordance with a project agreement, a plan of work and an annual report.

Mr. WHITTEN. You mean these payments to States are made on the basis that they submit to you their plans and you allocate the funds after you approve the project?

Mr. FERGUSON. The funds are allocated by formula and expended on the basis I just mentioned.

Mr. WHITTEN. Then these projects I am talking about, this 50-family plan, that is all projected at the national level?

Mr. FERGUSON. Let me comment on the 50 families. That is erroneous. This more intensive work, 50 families has been used in some States as a point of starting for an agent, with the idea that he could do this work more adequately in the beginning with a small group of families, and the number 50 has been suggested.

That does not mean, of course, that the next year or the year after he would work with the same 50. Some States are developing a group approach, and that seems to be the direction in which we

would normally move. It is an educational approach. It is not a paternalistic approach. We do not offer any management services to people. We do not provide any credit. This work is strictly in the field of educational assistance, helping these people to make their own decisions in their own management operations.

Mr. WHITTEN. I am not questioning at all that some benefit will result. I am questioning whether it is wise to shift that job to the Extension Service and thereby shift it away from these other services whose funds are cut.

Mr. FERGUSON. Of course, this particular job has never been assigned to the other services. This is strictly an educational program. It is not concerned with technical assistance in the field of soil and water conservation, nor is it concerned with the field of credit, which is the Farmers Home Administration field.

Secretary PETERSON. In that connection, Mr. Chairman, none of the assigned work of the other services, Soil Conservation, Farmers Home, or otherwise, is being transferred to Extension.

CONFLICTING RECOMMENDATIONS OF VARIOUS AGENCIES

Mr. WHITTEN. I will grant you that. But I have raised the point several times, if the Bureau of the Budget isn't doing the same thing by cutting off funds on the one hand, and enlarging funds on the other. I would like to read this from the report before you comment:

> Undesirable technical conflict was also observed between county agents and Federal employees on important conservation matters. In several North and South Carolina counties, for example, there was considerable divergence between technical recommendations made to the same farmers by the extension service and SCS. These were fundamental differences. For example, SCS personnel cited instances in which county agents had developed complete farm plans for SCS cooperators calling for row crops on the slopes and pastures on the flat or bottom lands. The SCS had, obviously, made opposing recommendations but the farmers caught in this conflict of advice would find some difficulty in choosing the best course to follow. However, similar conflicts obtained between local Federal employees and their superiors inasmuch as conservation techniques are not only debatable, but are, according to the highest authorities, subject to radical change with the development of new knowledge. Such differences are not surprising, though undesirable.
>
> Another significant development occurring in some States was the increased friction between the Extension Service and the vocational agricultural instructors in the public schools. It was learned in a few States that a pitched battle is developing or has developed between the two. The Extension Service apparently has taken the position that it has the right and responsibility to educate farmers and that the public schools are encroaching on its domain. This is considered a most significant development and one which is deserving of careful consideration at the highest level.

That is the finding of people who went out to talk to the folks in the field in both Extension and the various other agencies. I would like to have your views.

Secretary PETERSON. It is my understanding, Mr. Chairman, that in isolated instances, there have been conflicts in some cases in the States between the respective agencies, but in the vast majority of the instances on the use of crops following farm plans developed by the Soil Conservation Service, the State conservation service and the State extension director and their people in the States are working together, and the recommendations for plantings made by State experiment station, carried to the farmer by the State extension service, are being utilized by the Soil Conservation people in the

formulation and the supervision of the farm plans which are made by the State and the area conservationists.

There is, I think, no secret that as long as there are people engaged in programs impinging upon the same physical premises, you will from time to time have conflicts, and I have no doubt that such conflicts as you have called attention to have arisen.

I can only say that in our work, with the organization and policy committee of the land-grant colleges, our contacts directly with the State people, that those conflicts where they are arising are being resolved.

Mr. WHITTEN. Where your increased appropriation comes at the expense of others, that is not conducive to making the situation any better, is it?

Secretary PETERSON. Again, Mr. Chairman, as I said in testifying before your committee in the Soil Conservation and Research budgets, there is a matter of balance between the respective forces that we have to service the need of farmers, and whether the judgment has been applied correctly or erroneously is a matter to which this committee will naturally and properly direct its attention. But with the information we have, we are trying to seek that balance of forces with which we can move forward, Conservation, Extension, Research, Farmers Home, and other related agencies.

REWRITING OF TECHNICAL RESEARCH DATA

Mr. WHITTEN. Thank you, Mr. Peterson.

Now, moving to the next finding of the investigators, they make this statement:

> Discussions with State extension service personnel disclosed that one of their major workload items was the rewriting of technical research and other data disseminated by the Department of Agriculture in Washington. The statement was commonly made that a considerable volume of such material was received throughout the year from Washington, but that it was necessary in each State to convert it into readible form in order that it might be published or otherwise be made available to the public by the land-grant colleges or the State extension service.
>
> This proposition raises two serious questions. First, is it appropriate in all instances for each of the 48 States to place its own interpretation on the material distributed from Washington? In other words, would the translation into lay language readily understandable by the public result in any undesirable distortion of technical findings developed by the USDA or its associated research bodies? Secondly, there is the question of expense involved in rewriting and redistributing great volumes of material having general interest, which might be written in lay language in the first instance and reproduced at less cost on a volume basis. This is done in the case of many farmer's bulletins.

And the next question would be as to whether we should look into the research programs of the Department, if the information they are sending out from the Washington level has to be rewritten at the State level. We need to straighten it out at one place or the other if that thing has merit.

Mr. FERGUSON. May I comment on that, Mr. Whitten?

Mr. WHITTEN. Yes.

Mr. FERGUSON. I think reference is made here to the issuance of technical research information which comes out not only from the State experiment stations, but from the Department. Technical information must be interpreted and reduced to lay language. For instance research publications are usually written in technical lan-

guage. It is the job of the extension man to put these findings into lay language for the use of a farm family.

There is nothing at all unusual about that situation. That has gone on ever since I can remember.

Mr. WHITTEN. We spend a world of money each year on the basis that the Department of Agriculture has done a fine job in the research field. I don't offhand know, but the number of bulletins and publications released each year by the Department of Agriculture are tremendous. Presumably they are already in usable form, and it is hard to believe that it would be necessary to have the work done twice.

Mr. FERGUSON. I don't feel the reference is made here to our popular bulletins. I think reference is made to technical publications or bulletins. Technical publications must be reworded in terms that the layman can understand. I would defend the situation. The only way a farm family can get this material in usable form is for someone to take this technical information and put it in everyday language.

When this is done here in the form of farmers' bulletins, then it is not necessary to do it in the States. If it is not, then, of course, someone in the States would have to take the findings and adapt them to local situations.

For example, in a great many technological fields, information which might apply in one section of the State might not apply in another. In the State of Minnesota, the same fertilizer applications that you might recommend for the lighter soils in Minnesota certainly wouldn't apply down near the heavier soils in southern Minnesota. Research findings in this field have to be interpreted in terms of the kind of soil, the amount of rainfall, the kind of crops, and climate in which this research was done, and then stated in terms the family can understand.

Mr. WHITTEN. We all recognize the absolute necessity of information being put in usable form. The question is whether there is a duplication where the various bureaus put it out in usable form and then each State rewrites it once again.

Secretary PETERSON. In at least one State, Mr. Chairman, an effort is being made—and I am referring to my own State now where I am familiar with it—at the source, to put the findings of experimentation and research into popular language.

I think Mr. Ferguson is fully correct that many of the research and experimentation results put in bulletin form have been in technical language that other research workers might understand, but is certainly difficult of understanding by the farmer who was supposed to use it.

Now the way to get at that thing, it seems to me, is for the research worker himself to either put the material into usable form at the time it is being written, or to write his technical material and then himself interpret it for application before it goes out. I think it is possible to make considerable progress in the area of more effective communication between the research worker and the technical people and the folks who are to use the results of that information.

Mr. FERGUSON. Might I comment further on that, Mr. Whitten. In a good many States, the experiment station editors and extension editors work side by side and there is very close coordination between them.

VOLUME OF DEPARTMENTAL PUBLICATIONS AVAILABLE FOR DISTRIBUTION

Mr. WHITTEN. I am glad to have your comment on this, because I think it is something we should go into with the Department witnesses when they come before us. It is mighty easy, if you have lots of personnel at the State level, to put them to rewriting it just to suit their own slant on it. Whereas if they do not have the personnel they can go ahead and use it as released by the Department.

I am going to ask Mr. Wheeler to put in the record if he will, just how many bulletins and various other informational pamphlets and other things are available in the Department of Agriculture for distribution by Members of Congress and how many others already in usable form are released by the Department in the average year. I would like for the record to show what means of distribution we have of this research information.

(The information requested is as follows:)

In the fiscal year 1954, the Department had available 575 separate farm bulletins, and the Yearbook "Plant Diseases," for distribution through Members of Congress, to State extension services, and for departmental use in answering a large volume of requests for information. Copies of these bulletins and a Yearbook were distributed in 1954, as follows:

	Farm bulletins (copies)	Yearbook (copies)
Available to Members of Congress	5,608,000	230,850
Available to extension services	2,791,000	3,800
Available for Department use	1,873,000	8,200
Totals	10,272,000	242,850

In addition, distribution of other publications generally available in 1954 was as follows:

Category	Number of publications	Number of copies distributed	Principal distribution to—
Research and technical publications.	462	682,000	Scientists and research workers in State and Federal agricultural experiment stations, State agricultural colleges, and industry.
Administrative	53	52,000	Department employees for instruction and information.
Program aids	82	11,863,900	Farmers and others to secure maximum cooperation in carrying out authorized programs of the Department in soil, water and forest conservation, livestock and crop-disease control, insect control, etc.
Periodicals:			
(a) Agricultural situation	12	3,214,500	Crop reporters, State statisticians, and extension workers.
(b) Other periodicals	139	1,505,900	Department employees, extension workers, cooperators, and others interested in specific programs.
Statistical	52	62,100	Land-grant college and industry specialists concerned with production, marketing, etc., of agricultural products.
Other, regulatory, soil surveys, etc.	867	2,463,200	Organizations and individuals concerned with with regulatory and other required Department actions.

Secretary PETERSON. I think, Mr. Chairman, this is a most important area of discussion right here because we are trying to communicate with people in language through which they can understand the import of the communication.

Mr. WHITTEN. I do not question that. But if you can do it once and make it stick, it is better than doing it once and having it redone. Certainly we should keep the duplication of work at a minimum.

Secretary PETERSON. We are fully in accord with that, Mr. Chairman. We are always seeking as great efficiency as we can get in the expenditure of public funds.

INCREASE OF EXTENSION SERVICE AT EXPENSE OF OTHER AGENCIES

Mr. WHITTEN. Again I want to say that this is an agency in which we all believe. It is mighty hard to ask questions without being charged with bias. Again we are being asked to give you money and take it away from someone else. In simple form that is what the Budget does. The programs you are taking it away from are pest control, school lunches, and so forth. Many feel that those programs are just as essential as the others. Involved here is a proposed increase of $5 million after an increase of over $7 million last year.

With radio, television, with the various means of communication, the expansion of vocational education, 4–H Club work in the schools, the great number of magazines and newspapers, farm magazines and the releases by the Department of Agriculture, which go out over a widespread area, it is hard for me to see why we should be asked to cut down these other action programs so as to put 5 county agents in a county to disseminate information, unless you do mean to move in on a 50-farm family per agent basis and really give them the type of supervision that the Farmers Home Administration gives its clients. If you had the money I could see that would bring in some benefits. But from the standpoint of disseminating information and making it available to them I just question whether we should take the money away from action programs so as to expand your program to that extent.

Mr. SCHRUBEN. Do I interpret from what you have just said you think it is sufficient to put a bulletin in the hand of a farmer and assume from then on nothing else is necessary?

Mr. WHITTEN. No. I do not think so. I said earlier that getting the information disseminated and making it available to the farmer, is only part of it. The other is the work of the action programs. Under the scheme of things, the Department of Agriculture has these action programs in various other services. I know it has been repeatedly said that the Extension Service is the information and educational service of the Department of Agriculture.

It traces back through all the testimony that I have heard here. It is only under your expanded program of last year that I have heard anybody in the Extension Service accept or assume that it might be an action program. That is the first time in all the years that I have sat on this committee that I have heard of the Extension Service going beyond that.

Mr. FERGUSON. I would like to comment on that point. We do not regard this more intimate teaching as an action program. As a matter of fact, it is a method of doing extension work, it is a method of teaching.

Mr. WHITTEN. I know it will do some good. Don't misunderstand me on that.

Mr. FERGUSON. We have been criticized for relying too extensively on mass media. We do a lot of good with radio and television, news stories, and with magazine articles. Yet there is a large segment of the population that needs more educational assistance to help them to utilize that information, and to put the pieces of that information together into what we would term an on-going, well-organized farm business. The size of audience, will vary with the situation, but it is certainly much greater than 50 per agent. The estimate of 50 comes from the fact that agents in starting this more intensive teaching have said, "Let's start with 50 the first year and see how we get along." In my opinion they will work with several times 50 families.

Mr. WHITTEN. If we had money without limit, I think 5 county agents with 50 families apiece could do lots of good. I am just talking about whether or not we as a Nation have the money to go at it on that intensive a basis.

Mr. FERGUSON. We are not recommending it. That would be staffing far beyond what we believe to be necessary.

We logically start with a small group of families. The 50 same families would not be intimately assisted year after year. They would be graduated into a more extensive program and more intensive help given to new families.

Mr. WHITTEN. I just wish that the President of the United States and his Budget Bureau would send this request up here on its own merits. I wish they would not send it up here on a basis where we in this committee are put in the position of having to "rob Peter to pay Paul." That is the fix we were in last year and the one we are in now. If we were not in that fix, I might not have to examine you as closely to see if it is justified.

Secretary PETERSON. As to one part of your remarks within the limitations of your time we welcome the most careful attention the committee will give our budget.

Mr. WHITTEN. Thank you. We appreciate that. You have reflected that throughout these hearings.

NEW PERSONNEL RESULTING FROM 1955 INCREASE

Now if it is not too lengthy, I would like for you to list how many States used these additional funds for additional county agents, and the maximum number of agents that they put in any one county.

Also, I would like to know by States how many specialists were set up, what percentage of those specialists work out of the land grant college, and what part of them are teachers in the land grant college.

Mr. FERGUSON. Could we supply you with that?

Mr. WHITTEN. Yes.

Mr. SCHRUBEN. I have it here.

Mr. WHITTEN. You can supply it.

(The information referred to follows:)

Statement showing number of Extension employees added by the States as result of increased Federal funds for fiscal year 1955 (as of Jan. 1, 1955)

State	County agents	Maximum number of agents added to any one county	State staff specialists and supervisors [1]	State	County agents	Maximum number of agents added to any one county	State staff specialists and supervisors [1]
Alabama	37	3	----------	New Jersey	7	2	1
Arizona	4	1	----------	New Mexico	6	1	1
Arkansas	23	2	2	New York	17	1	1
California	24	1	----------	North Carolina	44	5	8
Colorado	10	1	2	North Dakota	12	2	1
Connecticut	2	1	1	Ohio	16	1	5
Delaware	1	----------	1	Oklahoma	20	2	1
Florida	16	1	----------	Oregon	9	3	1
Georgia	45	5	7	Pennsylvania	17	2	7
Idaho	4	1	----------	Rhode Island	----------	----------	2
Illinois	22	2	4	South Carolina	31	6	2
Indiana	14	1	4	South Dakota	6	1	3
Iowa	26	2	1	Tennessee	22	2	2
Kansas	22	2	4	Texas	30	3	5
Kentucky	43	2	3	Utah	4	1	1
Louisiana	23	1	1	Vermont	5	1	1
Maine	6	1	----------	Virginia	18	2	----------
Maryland	7	1	3	Washington	15	2	3
Massachusetts	6	2	3	West Virginia	10	1	3
Michigan	25	2	9	Wisconsin	27	1	1
Minnesota	22	2	1	Wyoming	2	1	1
Mississippi	45	5	1	Alaska	1	1	----------
Missouri	26	1	4	Hawaii	3	1	----------
Montana	10	1	----------	Puerto Rico	56	2	5
Nebraska	21	2	1				
Nevada	2	2	----------	Total	865	----------	107
New Hampshire	1	1	----------				

[1] Personnel located at the State land-grant college and devote full time to cooperative extension work. There were no specialists added that devote any part of their time to resident teaching.

Mr. SCHRUBEN. None of them were teachers unless they are part time. They do not teach on Extension time.

Mr. WHITTEN. None of them were part-time instructors or anything of the sort?

Mr. FERGUSON. There may be a few part-time. We will insert it in the record. (Note: See footnote on the table immediately above.)

ROLE OF STATE STAFF SPECIALISTS

Mr. WHITTEN. When you get a full-time specialist operating from a land grant college, how does he spend his time—going around working with agents in the various counties?

Mr. FERGUSON. Primarily the Extension specialist job is to train agents to use the subject matter in his particular field effectively and efficiently in his program in the county. Some State specialists will do some direct teaching, through demonstrations, lectures, some "on-farm counseling", but basically the role of the specialist is in support of the county Extension worker in providing him with the technical information and helping him to use it in the county.

Mr. WHITTEN. I, again, do not question the value of those things. But I do note that since 1943 the number of specialists has increased from 1,675 to approximately 2,256 in the budget request for the coming fiscal year.

Again, it is just a case of cutting the pattern to fit the cloth. It is a case of what we are able to do.

Mr. SCHRUBEN. The long time record shows that the percentage of funds going into support of State specialists since 1920 has been reduced from 31.9 to 17.8.

Mr. FERGUSON. The ratio of specialists to county workers is going down.

INCREASED BUDGET FOR MARKETING EDUCATION

Mr. WHITTEN. I notice you are asking $395,000 to further expand marketing educational work. I have raised the point 2 or 3 times about spending money on marketing, when the Secretary and the Department says that we will not sell the $4 billion worth of commodities we have on a competitive basis in world trade. I am wondering if we are wise to spend so much money on marketing when we won't offer these things for sale. You haven't gone into that, but it does raise a question in all the marketing work. I realize it is a vital field, but so many of the problems come because of the spread between the farmer and the consumer, which has increased to 57 cents of the consumer dollar. So much of that is controlled by unions, with various laws providing for given rates of return. Part of it results from the demand for more and better packaging and things like that by the consumer.

I recognize the need for research and marketing, and to expand marketing education. Research and marketing and extension are very popular words, not only with the public, but with me. If you read the Department of Agriculture's budget you will find one or the other of those appearing a multitude of times, and the amount of funds made available for it are a large part of the total appropriation for the Department. I would like to have your detailed statement as to why this is essential, in addition to all the other funds made available for the same kind of work.

Mr. FERGUSON. This 395,000 is requested under the Research and Marketing Act. That is not distributed to the States on a formula as are Smith-Lever funds. That is distributed to the States on the basis of projects approved, in two ways: A direct contract and on a matching basis. Those are specific marketing projects which are approved in our office before the funds are made available. They usually apply to specific commodities. I mentioned the one in South Carolina, on peaches. This has been a very successful program. I mentioned very briefly the one on meat-type hogs, which I feel has been very successful and is just now beginning to return great benefits. The University of Minnesota was one of the earliest universities to develop a hog that produced less fat and more lean meat.

Mr. ANDERSEN. I used to raise large Yorkshire hogs years ago, and I did so then even though they were an unpopular hog, but I personally felt that the large Yorkshires or similar hogs were what we should aim at for marketing. I am pleased to see that my State of Minnesota has pioneered in this great problem of producing the kind of a hog that is most acceptable to the market.

Mr. WHITTEN. Mr. Ferguson, the only solution I see for this committee, believing in all these works, would be for us to provide the funds for school lunch, pest control, flood prevention, soil-conservation service, and then provide that they could be allotted by those agencies to Extension Service on agreement of the parties, with the approval of the President. Then we would hand back to the President and his Bureau of the Budget what they have handed us. If we did that, would you ask them for the money?

Mr. FERGUSON. That is a very difficult question, Mr. Whitten. I want to think that one over.

Mr. WHITTEN. Mr. Marshall, any questions?

RATIO OF FAMILIES TO AGENTS

Mr. MARSHALL. Mr. Ferguson, we have listened with a great deal of interest to your statement, a finely prepared statement. I notice on page 3 of your statement that you state:

> With a staff now available each county agricultural agent is called upon to assist over a thousand farm families.

I am interested in the comparison in 1940 and 1930. Could you supply that?

Mr. FERGUSON. We will have to do some work on that, Mr. Marshall. May we supply you with that information?

Mr. MARSHALL. Yes.

Mr. FERGUSON. We will be happy to.

(The material requested follows:)

> In 1930, there were 2,325 farm families for each county agricultural agent and in 1940, there were 1,694 farm families for each county agricultural agent.

BASIS FOR DISTRIBUTION OF FUNDS

Mr. MARSHALL. You distribute the funds to the States on the basis of a formula, based on rural population?

Mr. FERGUSON. That is right, rural and farm.

INCLUSION OF INDIANS IN POPULATION FIGURES

Mr. MARSHALL. And when you distribute on a basis of rural population, are the American Indians included as rural population?

Mr. FERGUSON. Yes.

Mr. MARSHALL. Last spring there was some discussion upon the floor of Congress that the Extension Service did not have a responsibility of the Department of Interior.

Since the funds are distributed on the basis of that formula, don't you have a responsibility?

Mr. FERGUSON. We do have some responsibility, but the Department of Interior has had funds assigned to it for an extension program and since they were working in the reservations with the Indian people, the responsibility was left largely in their hands.

Last year, the Bureau of Indian Affairs proposed, through legislation, to turn this work over to the Agricultural Extension Service—the Indians require special assistance. In most cases they were not able to use the information quite as readily as were other folks. The Department of Interior deemed it advisable to transfer to the Department of Agriculture the funds and some personnel to develop a program through the colleges, in the same way as the regular extension program.

Mr. SCHRUBEN. I think there is one more point that should be made in connection with that, however, Mr. Ferguson, and that is, only Federal funds are apportioned using the Indian population. The taxing authority within the States to raise State funds in support of extension work does not include the Federal lands occupied by the

Indians, so there is no tax base for raising State funds to do this educational job.

The Federal funds represent less than 40 percent of the total, so these States with a large Indian population would have quite a time raising the funds necessary to do the educational job, so long as the work is divided.

Mr. MARSHALL. Certainly that is a point. However, have you had any State that has failed to match their Federal funds for extension work among the Indians?

Mr. FERGUSON. Yes. We had a State recently where they proposed to do some work with Indians, and the county, because they have no taxing power, would not agree to put any county funds into the program.

Mr. MARSHALL. It comes from the local taxing unit, the county, rather than from the State?

Mr. FERGUSON. In most States, land taxes accrue mostly to the counties. Where a high percentage of the land is in reservations neither the counties nor the State get revenue from it with which to match Federal funds.

Mr. MARSHALL. When you have distributed funds on the basis of this formula to that particular State, in including the Indians, do you redistribute that money or do you give it to that State?

Mr. FERGUSON. They get their Federal funds based on their farm and rural population with the Indians counted in.

Mr. MARSHALL. Since they do not have the physical resources to support the Indians, they are getting that fund on the basis of a formula that would indicate that a share of that should be intended to the Indians.

Mr. FERGUSON. They do some Indian work.

For instance, I do not believe there is any State which has any appreciable number of Indian people who do not have quite a few 4-H Club members among the Indian people.

As a matter of fact, when you get out in the Indian country at a fall fair or county fair, you see large numbers of little Indian folks with 4–H Club projects. The States do not neglect them entirely, and there is generally a very close working relationship between the two services.

However, as long as the Bureau is carrying the major portion of the work, the State college, because of its working relationship with the counties, does not move in without county support.

COMPARISON OF STATE STAFFS

Mr. MARSHALL. We have been interested, Mr. Ferguson, in making a comparison of State staffs, and we have before us a list of the number of specialist positions, budgeted in 1955, and the increases and decreases proposed for 1956. We are interested to note that you have, in working out information, 158 people and on the important subject of agronomy, soils and crops, 170 people, so that you have for practical purposes almost as many people working on information as you do on other subjects, which no one questions is an important part of Extension Service.

Mr. FERGUSON. It takes someone on the staff at a State college to do information work and he actually serves all departments. He

serves the agronomists, livestock people, dairy people, and others in developing an information program with and for them. Actually this information staff serves the entire Extension Service in the State.

Mr. MARSHALL. Are these the group of people that rewrite the bulletins?

Mr. FERGUSON. No. These people do not do a great deal of actual bulletin writing. That is done by specialists. Information people do editing and layout work.

Mr. SCHRUBEN. All of information work including radio and television is classed under this category. The people who schedule the radio and television broadcasts and do the other types of information work are listed under the information project.

Mr. FERGUSON. Then they do another thing, Mr. Marshall. They are the people upon whom the State Extension director depends, to train his county staff in the use of information. They will conduct training sessions on circular letter writing, on radio, on television, on news writing and on the preparation of articles for publication, so in addition to the actual services which they perform, they also play the role of the trainer of the field staff.

Mr. MARSHALL. There seems to be quite a variance as between States and the number of people you have in the category of information.

Mr. FERGUSON. There is quite a variance in States.

Mr. MARSHALL. Why is there such a variance?

Mr. FERGUSON. It differs with the philosophy of building an extension program within a State. It also depends on the number of county units that have to be served. It takes a minimum number of subject matter specialists to cover the main subject matter fields for any particular State. If subject matter specialists are employed as part time teachers in any considerable number that may result in a larger specialist staff. If they are used primarily as trainers of county staff, it may result in a somewhat smaller specialist staff.

It also depends to some extent on how highly specialized the agriculture of that particular state may be.

In a State in which you have only 2 or 3 major lines of farming the number of State specialists will usually be smaller, but in some States you have many highly developed specialties. Let me use, for an example, my home State of Ohio, where we have a large amount of greenhouse glass. In the vicinity of Cleveland there are over 500 acres of glass. We had one horticulture specialist whose major responsibility was to work with the greenhouse people. Other States would have little need for that kind of a specialist.

Mr. MARSHALL. I note that in State staffs, as between States, that there is a considerable difference in the number. For example, in the State of Iowa I notice that you have 70 full-time extension people on the State staff. In our State of Minnesota, I notice that we have 37 on the State staff. Why the vast difference there?

Mr. FERGUSON. I think you would find that fundamentally the difference there is a difference in the general philosophy of doing extension work. Minnesota has relied more on its specialists as trainers of agents while I think Iowa has relied more on its specialists to do direct teaching.

Mr. MARSHALL. I notice that the State of New York has 96 full-time specialists, on the State staff, and 77 part-time State staff.

Mr. FERGUSON. You have very highly developed and diversified agriculture in New York State with a very high degree of specialization. New York would be one of the States which has many of these specialties—greenhouses, gardening, dairying, and tremendous variation in the agriculture of the State, which would account for that. Mr. Schruben would you have any other comments on that? You used to be a State specialist.

Mr. SCHRUBEN. I think that is the major reason, I think that there is one other point that should be recognized, and that is that the State legislatures and the State boards of control in which these States have to go through to get the funds, scrutinize everyone of these positions very carefully, and for the most part these specialists positions are financed by State appropriations, so that each of those positions have to be justified at 4 or 5 different places before the funds are made available for their employment.

Mr. MARSHALL. What control do you have over a situation of that kind, where you contribute money to the State and the State decides that they are going to use it to build up a State staff rather than to use it out in the counties?

Mr. FERGUSON. We have no absolute control. Our only control is through discussing the problem with the States.

Mr. SCHRUBEN. The money is expended on the basis of project agreement and plans of work which must be included in the plans for expenditure of money. It is in this relation that the Department would call attention to the fact that "Here is a proposal within the State that a specialist be put on where the industry of that State does not seem to justify adding such a specialist."

REWRITING BULLETINS

Mr. MARSHALL. I think this ties in with the question that the chairman was raising a moment ago about the rewriting of bulletins.

If you have someone in a State, and not mentioning any particular State, who is interested in doing a rewrite job, his staff will rewrite all bulletins. If you have a State director who is interested in building up a State staff, he is going to go pretty much in that direction, is he not? How can you prevent him from doing those kind of things?

Mr. FERGUSON. May I comment on that?

Mr. MARSHALL. Yes.

Mr. FERGUSON. I once played this role: I was a State director and I was a State specialist.

Let's go back to this matter of rewriting bulletins.

We never wrote or rewrote a bulletin where we could use a Federal bulletin. I think that is generally true. Any time I could get somebody else to write a bulletin for me, I assure you I did it.

In most States, the State director has to worry over his publication budget. He has to stretch those dollars to get enough bulletins to keep the agents happy and supply them with the kind of publications and other aids they need.

That was always one of our problems. Any time we could buy bulletins cheaper than we could write them, if they would serve the purpose, we bought them.

We bought bulletins from other States. If another State had a bulletin that we thought would do the job, we bought that bulletin. There is a good bit of that going on between the States.

While we are on this subject of information, I think we are overemphasizing the significance of bulletins. The tendency is to get away from bulletins and use more leaflets.

We are putting too much weight on bulletins in our discussion because the leaflet, the circular letter, the radio broadcast, and today the television broadcast, the story in the weekly paper, in the farm magazine is probably just as important as the bulletin. I used to say to the folks in our State, when they wanted something quickly, "Why don't you give your story to the farm papers? They will get thousands of them distributed, next week, at no cost to us. If you depend on us to write a bulletin it will take us 2 months to get it out.

Mr. MARSHALL. We have had this called to our attention where a county agent desirous of getting information, and wanting that information promptly, Mr. Ferguson, felt that they were delayed in getting it because of the efforts of some State group to rewrite that information, meaning that it takes longer on that basis to get the information from the research people into the hand of the man who meets the farmer. That is the point that we are concerned about.

Mr. FERGUSON. Many of our research people do some very good popular writing, but so many times a piece of research may have specific application under a set of specific circumstances, which the specialist may understand but which the agent may not. In a good many cases the specialist may keep the agent out of difficulty by saying, "For your particular situation, this recommendation will fit a little better than the other because it fits this particular set of circumstances."

NUMBER AND CLASSIFICATION OF EXTENSION WORKERS BY STATES

Mr. MARSHALL. I wonder if you could supply for the record a breakdown showing for each State the number of supervisors, the number of specialists the agricultural agents, the home demonstration agents, the 4-H Club agents and Negro agents.

Mr. FERGUSON. As of now?

Mr. MARSHALL. Yes. The latest information that you have.

(The information requested follows:)

UNITED STATES DEPARTMENT OF AGRICULTURE
EXTENSION SERVICE
December 31, 1954
NUMBER OF EXTENSION WORKERS

	Number of Agricultural Counties	Directors and assistant directors	County agent work							Home demonstration work							Boys' and girls' club work[1]								Specialists	Total
			White				Negro			White				Negro			White				Negro					
			State leaders	Assistant State leaders and district agents	County agents	Assistant county agents	State leaders	Assistant State leaders and district agents	County agents	State leaders	Assistant State leaders and district agents	County agents	Assistant county agents	State leaders	Assistant State leaders and district agents	County agents	State leaders	Assistant State leaders and district agents	County agents	Assistant county agents	State leaders	Assistant State leaders and district agents	County agents			
Region:																										
	8	2	1		8	10				1		9	4				1	1	6	10					30	89
	3	1	1		3	2				1		3	1			1	1		2	1					16	33
	16	2	1		14	9				1		14	2				1	1	13	1					18	77
	23	1	1	1	23	25			9	1	2	22	14		1	8	1	3							79	191
	12	1	1		19	13				1		12	13				2	4	10	18					33	127
	10	2	1		10	11				1		9					1	1	10	5					19	70
	20	2	2		20	18				1		19	6				1	5	18	7					29	124
	36	1	1	4	36	79				1	4	55	56				1	5	34	46					142	325
	67	2			67	74				1	4	66	16				1	9							37	220
	5	1			3					1		3	1				1		3	2					13	28
	14	2		1	14	6				1		13					1	1	13						22	74
	55	2	1	1	49	9	1		2	1	2	40			1	7	3		36	1			2		26	184
Total..	289	22	10	7	286	256	1		11	12	12	265	213		2	16	15	26	165	91			2		524	1,836
Region:																										
	67	2		4	67	124	1	2	44	1	4	67	65		2	36	1	1			2				37	460
	75	3	1	4	79	60	1		20	1	4	79	12	1		27	2				1				31	326
	66	2		3	66	51		1	10	1	4	50	20		1	12	2	2							31	256
	158	5		6	156	58	1	1	49		6	133	37		2	35		6			1	1			55	590
	120	3	1	6	120	73		1	2	1	6	103	21			6	1	10							46	400
	64	2		7	64	88		1	21	1	4	64	47		1	22	1	3		1					44	371
	82	2		4	82	114	1		47	1	6	81	46		2	62	1	4			2	1			98	512
	100	3		6	100	167	1	3	66	1	7	100	93		3	98	1	6			1	1			84	702
	77	2		4	77	63		1	12	1	6	77	35		1	13	1	3							46	342
	46	2		3	46	69	1	1	38	1	4	46	33	1	2	35	2	3							49	336
	95	3		7	95	89		1	14		5	91	44		1	12	1	3							54	420
	254	3	2	12	248	91	1	2	55	2	13	186	45	1	2	47	1	3							66	779
	99	5		6	98	65	1	1	30		6	93	16		2	30	1	3							74	431
	60	3		8	67	80				1	7	61	29				1	1							39	297
Total..	1,363	40	4	80	1365	1190	8	15	408	12	82	1291	543	3	18	396	16	48			7	4			712	6,182
Region:																										
	102	2		7	99	43				1	5	95	23				1	11	33						61	381
	92	2		6	92	68				1	2	80					1	12							78	342
	99	4	1	5	100	16					5	78	12				3	5	41						107	377
	105	2		6	105	27				2	4	96	8				1	6	42	1					65	365
	83	2	1	6	75	46				1	4	55	19				1	11	46	11					89	367
	87	2	1	4	91	28				1	4	65					1	9	15						41	262
	114	2	1	5	114	107				1	7	109	11			4	1	6							45	407
	93	2	1	5	84	24				1	3	41	7				1	5							42	216
	53	1	2	3	51	12				1	1	19	1				1	5							26	123
	88	3		6	88	47				1	4	81					1	5	2						60	298
	67	2		3	59	8				1	1	40	1				1	7							34	157
	71	4		5	71	60					4	65	8				1	5	23						70	316
Total..	1,054	28	7	61	1029	486				11	44	818	90			4	14	87	208	12					718	3,611
Region:																										
	14	2			12	12				1		8	2				1	1							14	39
	54	2	1	6	50	205				1	4	85					1	8							49	412
	54	1	1	3	51	18				1	1	41	2				1	3	7						24	144
	44	2		3	41	6				1		26	4				1	2	9						19	114
	56	2		2	47	20				1	1	24	4				1	2							26	130
	16	3			11	4				1		5													4	28
	31	3	1		30	25				1		19	16				1	2							18	116
	36	5		3	69	3				1	2	36	2				1	3	28	5					54	212
	29	2	1		27	10				1		25	1				1	1							27	96
	39	2	1	2	37	4				1	2	45	3				1	2							25	145
	23	2	1		22	8				1		21					1	1							14	71
	4	3			2							6													13	24
	5	2	1		10	25				1	1	9	9												15	75
Total..	405	31	7	19	469	340				12	11	350	43				11	26	44	5					302	1,670
al....	3,111	121	28	167	3149	2272	9	15	419	47	149	2664	789	3	20	436	36	187	411	108	7	4	2		2,256	13,299
1, 1953	3,108	114	21	158	3042	1924	9	16	392	47	147	2588	770	2	18	433	35	187	460	98	7	4	3		2,195	12,670
		21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21			

[1] These are special 4-H club workers. In the majority of States, Alaska, Hawaii and Puerto Rico, 4-H Club work is conducted by county agents, county home demonstration agents and assistants.

Mr. MARSHALL. When the Agricultural Research Service was befor
us, the question came up concerning the letting of a contract o
$50,000 to get information concerning the availability and the prope
structure of farm buildings.

Was the Extension Service ever asked to supply information alon
that line specifically?

Mr. FERGUSON. I do not recall that it was.

Mr. MARSHALL. Would you refresh your memory and if there i
anything further you could put in on that, please do?

Mr. FERGUSON. Please tell us a little more about it.

Secretary PETERSON. It is the Doane contract, the examination o
dairy farm buildings in the St. Louis area, I think you are talkin
about.

Mr. FERGUSON. It has not been discussed in our Department t
my knowledge. It may have been discussed in the Department o
Agriculture programs.

Mr. MARSHALL. Would you look into this information furnished b
this particular contract and inform me as soon as possible whethe
that information was available through the Extension Service?

Mr. FERGUSON. I am not familiar with it. I will look into it.

FORESTRY PROGRAM OF EDUCATION

Mr. MARSHALL. We have one other problem that is called to our
attention by a committee in our own State legislature that made some
inquiry concerning the Extension Service forestry program. They
state in their report:

> The Extension Service, under the direction of the college of agriculture, has
> carried out a forestry program of education and demonstration for farmers since
> 1926. Two extension foresters located in St. Paul have supervised the encourage-
> ment of tree planting for shelterbelts and woodlots, field demonstrations in mark-
> ing of timber for selective cutting, assistance to county agricultural agents in
> providing advice to farmers and the training of youth in 4–H forestry and con-
> servation projects on a statewide basis. Because of limited manpower and
> because the extension program has been largely developed to demonstrational and
> educational work, it has been difficult for the Extension Service to provide
> on-the-ground assistance to farmers with forestry problems. This function is
> being handled well in Minnesota, and all but one of the other States through the
> Private Forest Management Service under the Division of Forestry.

That is the State division of forestry.

> In Itasca County, however, which has 168,200 acres or 11½ percent of its
> forest land in farm woodlots the Extension Service has made available a county
> extension forester to do this work during recent years. In the late summer of
> 1954, three more county extension foresters have been located in Beltrami, Pine,
> and St. Louis Counties through additional Federal appropriations to the Extension
> Service. In St. Louis County, less than one-tenth of the forest lands is located
> on farms. In Beltrami County, 15 percent and in Pine County, 12 percent.
> The entry of the Extension Service into the field of direct action poses an issue
> which conflicts with its original functions and overlaps the private forest manage-
> ment, assistance program of the Department of Conservation and is uncoordinated
> with the soil-conservation districts. County extension foresters are largely limited
> to assistance to farmers and forester practice in counties where farm forestry is
> a very minor part of the forest economy. Nothing is being done about the
> increasingly difficult marketing problem, because the legislature is likely to be
> called upon to provide additional funds for this program, a thorough reexamina-
> tion of the university's extension service and the Federal Extension Service as
> related to State programs and funds is suggested—

and then they go on with a recommendation:

In order to prevent duplication and overlapping in forestry assistance programs to farmers and other private owners, it is recommended by the Commission that the Extension Service confine its forestry efforts to general educational demonstrational and marketing promotional work and further a memorandum of agreement between the Extension Service and the Division of Forestry be executed defining the propsective functions of the two agencies. It is recommended that Congress appropriate the funds now going to the extension farm forestry program at county level over to the State division of forestry to be administered through the channels of the Private Forestry Management Assistance Act of 1951. It is strongly recommended that county extension farm foresters be directed to work with a county land commissioner and to provide assistance in the administration of county forest land and the work of the proposed county work land use committee where work of a technical nature is badly needed.

Do you have any comment on that?

Mr. FERGUSON. No, I have not, Mr. Marshall. I am not familiar with that situation in Minnesota. We would be very glad to sit down and discuss it with the director in Minnesota. The points you have made here demonstrate the close scrutiny made by local citizens and State officials of programs which as extension work such makes for good and economical administration.

Mr. MARSHALL. Mr. NATCHER.

Mr. NATCHER. Mr. Chairman—Mr. Peterson, I certainly agree with that portion of your statement in which you state that it profits the farmer or the country little for the department for colleges or others to do good research unless the results are taken to farm people in such a way that they can apply them.

I most heartily agree with that statement, Mr. Peterson. I for one personally believe that we should have more research work done actually on the farm.

COUNTY AGENTS AS MEMBERS OF ASC COMMITTEE

Mr. Ferguson, I would like to ask you a question concerning county agents. Under the present law, as I understand it, county agents are now ex officio members of the ASC committee; that is correct, isn't it?

Mr. FERGUSON. Yes.

Mr. NATCHER. Now, how do you find that this works in practice? Has it been successful, or are county agents as a general rule only called in in cases of emergency and critical matters? Do they actively engage as a member of the ASC committees, and has it been successful?

Mr. FERGUSON. To my knowledge it is working very well. I have heard no complaints on it, Mr. Natcher.

Mr. NATCHER. I believe that is all I have, Mr. Chairman.

Mr. MARSHALL. Mr. Andersen?

Mr. ANDERSEN. Mr. Ferguson, I welcome you again before this subcommittee. Extension has always been one of the fine programs which has, I might say, been very close to the hearts of the members of our subcommittee.

I am sure, Mr. Ferguson, that Congress will deal very fairly with Extension this year, just as it will with the other great programs in Agriculture.

Salaries and Expenses, Federal Extension Service

Amounts available for obligation

	1954 actual	1955 estimate	1956 estim
Appropriation or estimate		$3,867,500	$3,86
Reimbursements from other accounts		3,624	3,6
Obligations incurred		3,871,124	3,86
Comparative transfer from—			
"Salaries and expenses, Extension Service":			
Direct appropriation	$2,092,907		
Reimbursements from non-Federal sources	366		
Reimbursements from other accounts	106		
"Payments to States, Hawaii, Alaska, and Puerto Rico, Extension Service":			
Direct appropriation	243,982		
Reimbursements from non-Federal sources	211		
Reimbursements from other accounts	8,977		
"Agricultural Marketing Act, Agriculture"	96,104		
"State and private forestry cooperation, Forest Service"	20,977		
"Salaries and expenses, Farmer Cooperative Service"	2,000		
"Salaries and expenses, Rural Electrification Administration"	11,062		
"Conservation operations, Soil Conservation Service"	25,055		
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration"	1,800		
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration"	3,785		
"Salaries and expenses, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration"	25,000		
Comparative transfer to "Salaries and expenses, Office of Information, Agriculture"	−4,975	−5,000	
Total obligations	2,527,357	3,866,124	3,86

Note.—Reimbursements from non-Federal sources above are from proceeds of sales of personal proper (40 U. S. C. 481 (c)).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estima
Direct Obligations			
1. Coordination, administration, and program leadership of cooperative extension work	$1,302,009	$1,920,000	$1,920,0
2. Penalty mail for cooperative extension agents	1,215,688	1,942,500	1,942,5
3. Obligations payable from reimbursements from non-Federal sources	577		
Total direct obligations	2,518,274	3,862,500	3,862,5
Obligations Payable Out of Reimbursements From Other Accounts			
1. Coordination, administration, and program leadership of cooperative extension work	9,083	3,624	3,6
Total obligations	2,527,357	3,866,124	3,866,1

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Summary of Personal Services			
Total number of permanent positions	209	292	284
Full-time equivalent of all other positions	2	1	1
Average number of all employees	191	271	270
Number of employees at end of year	194	285	278
Average salaries and grades:			
General schedule grades:			
Average salary	$5,625	$5,752	$5,808
Average grade	GS–7.9	GS–8.2	GS–8.3
Ungraded positions: Average salary	$4,917	$6,589	$5,969
Personal service obligations:			
Permanent positions	$1,066,554	$1,539,562	$1,555,905
Positions other than permanent	4,687	3,084	2,494
Regular pay in excess of 52-week base	3,972	5,901	5,807
Payments above basic rates	1,153		
Other payments for personal services	1,742		
Total personal service obligations	1,078,108	1,548,547	1,564,206
Direct Obligations			
01 Personal services	1,069,067	1,544,973	1,560,632
02 Travel	121,362	188,000	188,000
03 Transportation of things	27,032	32,000	32,000
04 Communication services	15,372	21,000	21,000
Penalty mail for cooperative agents	1,215,688	1,942,500	1,942,500
05 Rents and utility services	354	500	500
06 Printing and reproduction	45,048	66,175	63,175
07 Other contractual services	3,396	11,577	11,112
Services performed by other agencies	3,036	25,000	20,000
08 Supplies and materials	8,868	12,675	12,581
09 Equipment	8,175	17,100	10,000
15 Taxes and assessments	876	1,000	1,000
Total direct obligations	2,518,274	3,862,500	3,862,500
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	9,041	3,574	3,574
15 Taxes and assessments	42	50	50
Total obligations payable out of reimbursements from other accounts	9,083	3,624	3,624
Total obligations	2,527,357	3,866,124	3,866,124

Analysis of expenditures

	1954 actual	1955 estimate	1956 estimate
Obligated balances brought forward			$652,460
Obligations incurred during the year		$3,871,124	3,866,124
		3,871,124	4,518,584
Reimbursements		−3,624	−3,624
Obligated balance carried forward		−652,460	−655,460
Total expenditures		3,215,040	3,859,500
Expenditures are distributed as follows:			
Out of current authorizations		3,215,040	3,255,000
Out of prior authorizations			604,500

BUDGET JUSTIFICATION DATA

Mr. MARSHALL. We will now insert pages 186 to 195 of the justifications relating to the Federal Extension Service.

(The pages referred to follow:)

Salaries and expenses, Federal Extension Service

	Administration and coordination	Penalty mail	Total
Appropriation Act, 1955	$1,925,000	$1,942,500	$3,867,500
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of Information, Agriculture" for news-type photographic services	−5,000		−5,000
Base for 1956	1,920,000	1,942,500	3,862,500
Budget estimate, 1956	1,920,000	1,942,500	3,862,500

Project statement

Project	1954	1955 (estimated)	1956 (estimated)
1. Coordination, administration, and program leadership of cooperative extension work	$1,302,009	$1,920,000	$1,920,000
2. Penalty mail for cooperative extension agents	1,215,688	1,942,500	1,942,500
Unobligated balance	512,093		
Total available or estimate	3,029,790	3,862,500	3,862,500
Transferred pursuant to Public Law 286 from:			
"Salaries and expenses, Office of Experiment Stations, Agricultural Research Administration"	−10,250		
"Virgin Islands agricultural program, Office of Experiment Stations, Agricultural Research Administration"	−4,820		
"Salaries and expenses, Bureau of Dairy Industry, Agricultural Research Administration"	−3,200		
"Control of forest pests, Agriculture"	−13,646		
"Salaries and expenses, Commodity Exchange Authority"	−7,727		
"Salaries and expenses, Farmers' Home Administration"	−833,000		
"Removal of surplus agricultural commodities"	−812,357		
Transferred in 1955 estimates from:			
"Payments to States, Hawaii, Alaska, and Puerto Rico, Extension Service"	−243,982		
"Agricultural Marketing Act, Agriculture"	−96,104		
"State and private forestry cooperation, Forest Service"	−20,977		
"Salaries and expenses, Farmer Cooperative Service"	−2,000		
"Salaries and expenses, Rural Electrification Administration"	−11,062		
"Conservation operations, Soil Conservation Service"	−25,055		
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration"	−1,800		
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration"	−3,785		
"Salaries and expenses, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration"	−25,000		
Transfer in 1956 estimates to:			
"Salaries and expenses, Office of Information, Agriculture"	+4,975	+5,000	
Total appropriation or estimate	920,000	3,867,500	

Status of Program

1. *General.*—The Federal Extension Service functions in three broad areas:

(*a*) As the educational agency of the Department of Agriculture, coordinates the educational activities of the Department and administers the Federal laws related to extension work.

(*b*) Provides national leadership to insure a modern, progressive, highly productive and efficient educational program in assisting farm families to apply research results to modern day agriculture. This leadership is in the areas of the farm unit approach, program analysis and evaluation, finding and applying successful educational techniques, personnel training, effective use of radio, television, publications, sound, efficient administrative procedures and fiscal and personnel management. While program operations are geared to the needs and wants of the people and take place primarily in the counties and on the farms and in the homes, county agents are only as effective as their State and national leadership. The States operate for the most part within their borders and look to the Federal Extension Service for national leadership in the overall planning and direction of the nationwide system of cooperative extension work.

(*c*) Maintains close liaison with the research and action agencies of the Department, and as the coordinator of the educational work of the Department undertakes to incorporate all educational work of the Department into the educational and service work of the States and counties; works closely with other departments of Government and national private and public organizations and groups in order that all national effort of significance is coordinated with extension work in each State and Territory.

2. *New extension techniques explained.*—Regional and State conferences were conducted for all States to train State administrators and program leaders in new techniques of working with farm families more efficiently and effectively.

3. *Need for postwar farm adjustments stressed.*—Agriculture is faced with many adjustment problems from an expanded production situation to meet war and reconstruction needs to one of contracted foreign outlets and more normal domestic markets. Declining farm prices, high farm costs, shrinking foreign markets for agricultural products, accumulating Government stocks, lack of storage facilities, changing world situations, business conditions and outlook, have intensified the need for economic information and educational programs.

Federal extension economists have given attention to these urgent problems and needs for economic information (*a*) to help bring better understanding of economic conditions and a better balance between agricultural production and utilization; (*b*) to expand outlets for farm products, and (*c*) to improve efficiency and reduce marketing costs.

4. *Assistance provided on grain storage problems.*—The Federal Extension Service has taken a major role in the grain storage program through the preparation of educational materials and furnishing information to State extension services on support programs, facility, and equipment loans, research on construction and operating costs, and other facts pertinent to assisting farmers and the grain trade in meeting storage needs. Two circulars entitled, "Does Farm Wheat Storage Pay?" and "Economics of Storing Corn on the Farm" were prepared and made available for use by States.

5. *Effective action restored orderly marketing of broilers.*—In an effort to relieve a demoralized broiler market which occurred in mid-December 1953, the Federal Extension Service provided market and outlook information to the State extension services and others for dissemination to producers, processors, distributors, and consumers. The result was a noticeable increase in the strength of commercial broiler prices. Prices in the Delmarva area increased from 3 to 5 cents per pound. The action aided immeasurably in bringing to all segments of the poultry meat industry and consumers knowledge which resulted in a more normal and orderly movement of broilers through the market channel.

6. *Facts on beef helped avoid demoralization of cattle market.*—A record of 93.6 million head on farms and the 1953 drought combined to make for record slaughter during 1953. Sharp price declines and some lack of producer confidence in the future contributed to a declining price of cattle. Starting in June the Federal Extension Service provided producers, through State and county extension workers, with a series of fact reviews presenting the plans, facts, and figures regarding the beef purchase program and the effect it would have on the market for lower grades of cattle. This marketing information helped to reestablish confidence and stabilize the cattle market.

7. *Need for increased marketing efficiency emphasized.*—With producers receiving a smaller and smaller share of the consumer dollar, strengthened national leadership has been provided the States in their expansion of educational work designed to improve the efficiency of marketing by applying the results of marketing research in an effort to change this trend. During the year a special training conference on expanding marketing educational programs was held for State extension directors. Directors or their representatives from 36 States and Puerto Rico attended.

8. *Farm forestry publication provided to State extension foresters.*—A publication was prepared on "Farm Forestry Extension, What It Is and How It Works," also several issues of Random Forestry Notes, were prepared as a means of providing State extension foresters the best methods of applying the latest information to forestry extension work.

9. *Effective home management methods encouraged.*—All members of the home economics staff provided program leadership in assisting State extension workers in using effective educational methods in extension work. Particular attention was given to developing new programs, expanding existing programs in providing more personal assistance to farm families and in strengthening consumer education, family living, public affairs and work with young homemakers and boys and girls through 4–H Clubs.

10. *Extensive assistance provided 4–H Club programs.*—The Federal staff provides assistance to State extension directors and 4–H Club leaders in analyzing, planning, and developing 4–H educational programs for youth. Consultative and advisory service is provided in coordinating youth work as an integral part of the total extension educational program. Following sound conservation practices, more than 600,000 acres of land is being managed by 4–H Club members. The nearly 100,000 acres of vegetable crops grown by 4–H boys and girls are examples of how club work is contributing to community and family needs.

The Federal extension staff develops the program for the National 4–H Club Camp which involves the assimilation of the recommendations of State leaders and others into a program of action. The Nation's executive, judicial, and legislative leaders are contacted in arranging for their participation in assembly programs, inspirational ceremonies, and discussion meetings. Special training sessions are organized for leaders as well as delegates. National 4–H Club delegates return to their homes better acquainted with departments of Government and a new understanding of how the branches of Government function in our democratic society. Their horizons are widened to the problems beyond their State and country's borders. They have a deeper realization of the responsibilities of competent citizenship and are inspired to give greater service to their club, their community, and their country. National Camp also serves as the planning apex for the National 4–H Club program. 4–H Club members, State leaders, representatives of the Federal Extension staff share in the development of the 4–H Club program for the Nation in the environment of the Nation's Capital.

11. *Manual developed on Extension techniques.*—Extension is constantly challenged to develop new programs and improved techniques for serving an ever-changing rural life. The aggressive prosecution of a comprehensive program of field studies helps administrative and supervisory officers, subject matter specialists and county extension workers to more systematically evaluate their work; to modify and improve current teaching methods and take advantage of new methods; to analyze the interests and needs of people and utilize the program planning process for teaching purposes; and to provide a body of scientific information about extension for administrative and supervisory consideration in the formulation of programs, policies and procedures.

The significant findings from extension research and other reliable sources relating to the relative effectiveness, economy and essential elements in the use of the various teaching methods used in extension have been incorporated in a reference manual for the guidance of State and county extension workers. This publication will also serve as a text for methods course given in connection with personnel training programs.

12. *National center for research and training planned.*—Even though extension workers have had good basic undergraduate training in agriculture or home economics, including some attention to the educational process and the skills required to work with people, much of the technical proficiency in extension teaching must be acquired on the job, experience being supplemented with an adequate in-service-training program. Induction training to assist the 1,500 to 2,000 new extension workers employed each year to get started right is exceedingly important. Graduate study provides specialized training to fill key administrative and supervisory vacancies as they occur. A committee of the Land-Grant College Association is actively engaged in developing plans for the establishment of a national center for advanced study in administration and supervision. Such a center would provide much needed facilities for the conduct of both research and training in this exceedingly important aspect of extension.

13. *Extension teaching materials furnished cooperative extension workers.*—In response to needs and requests, teaching materials were prepared and distributed to the 12,700 State and county cooperative extension workers to keep them quickly and adequately informed of national problems, policies, and programs affecting rural people, of research results, of agricultural, rural family living, and domestic and foreign agricultural outlook and other information. These included:

Providing staff members with copies of Department and other policy releases and program statements and extension circular letters and statements relating to extension educational programs.

Keeping extension workers informed about Department publications relating to subject matter and research, and filling 14,100 requests from State extension workers for 3,286,400 printed and 184,200 processed publications.

Preparing and issuing the Extension Service Review, a monthly periodical for all cooperative extension workers, giving special emphasis to educational methods, marketing, training, program planning, home demonstration, and 4–H Club phases of cooperative extension work. Seven issues included special attention to the strengthening of farm and home development.

Producing 9 new filmstrips, and maitaining a filmstrip service from which 7,749 filmstrips were ordered by extension and other educators over the country.

Distributing about 7,500 photographs for educational use in response to requests from the States and others.

14. *Communications training intensified.*—State and county extension workers supplement and strengthen their face-to-face educational efforts both with visual aids and information through communication channels, such as newspapers, television, radio, etc. To help them do a more effective job training activities were carried on by the Federal Extension Service in the use of all types of informational media. A television handbook was prepared as a training aid for county extension workers and 43 television training sessions were conducted in 21 States which 2,200 extension workers attended.

15. *Training meetings of State administrative officers conducted.*—At the request of the Western and Southern States extension directors, the Division of Management Operations arranged and conducted seminar-type training meetings for administrative officers of the two regions. The meeting with the Western group was held in Salt Lake City in February and the Southern representatives came to Washington in April. Special attention was given to new developments in personnel and fiscal procedures and their application to State extension offices. Additional advice and assistance along general administrative lines was provided the staff members who have recently become responsible for the business affairs of State extension services. Meetings of this kind provide an excellent opportunity for representatives of the various States to discuss and solve jointly the many administrative problems that are of common concern to the States and the Federal Extension Office.

Statement of obligations under allotments and other funds

(Includes only those amounts which, by Nov. 30, 1954, were actually received or programed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations 1954	Estimated obligations 1955	Estimated obligations 1956
Allotments from, administrative expenses, sec. 392, Agricultural Adjustment Act of 1938, for technical assistance rendered agricultural stabilization and conservation committees in the administration of programs in Alaska	$800	$800	$800
Local administration, sec. 388, Agricultural Adjustment Act of 1938, Agriculture, for technical assistance rendered agricultural stabilization and conservation committees in the administration of programs in Alaska	4,500	4,500	4,500
Total	5,300	5,300	5,300
Allocations and working funds: (advances from other agencies), Foreign Operation Administration, for expenses in connection with training and technical assistance activities	63,352	98,000	----------
Trust funds:			
Miscellaneous contributed funds, Department of Agriculture:			
For cooperative work with land-colleges on appropriate inservice training activities through summer-session courses for extension workers	2,807	2,000	2,000
For the services of a coordinator and for a cooperative study to evaluate progress and effectiveness of the international farm youth exchange program	8,866	3,044	----------
For the services of an educationist to plan, organize, and conduct special phases of the educational program of the international farm youth exchange program	4,791	----------	----------
Returned to donor	----------	6,523	----------
Total, miscellaneous contributed funds	16,464	11,567	2,000
Obligations under reimbursements from governmental and other sources, Federal extension service: From the proceeds of the sale of personal property, and from various other Government sources for personal services, taxes, and assessments	9,660	3,624	3,624
Total, obligations under allotments and other funds	94,776	118,491	10,924

Mr. MARSHALL. Do you have a statement on this?

Mr. FERGUSON. It is included in our formal statement, Mr. Marshall.

Mr. WHEELER. There is no change in the appropriation for salaries and expenses of the Extension Service, Mr. Marshall.

Mr. MARSHALL. You are not asking for any increase over 1955?

Mr. FERGUSON. That is right.

Mr. MARSHALL. You had an unobligated balance of $512,093 as of last June 30. Would you explain that?

Mr. FERGUSON. Yes. Mr. Schruben, would you take that one?

Mr. SCHRUBEN. Of that unobligated balance, Mr. Marshall, $508,312 represents penalty mail funds. As you know, in August of 1953, a bill was passed which required that the Post Office Department be reimbursed for the cost of penalty mail used by the different Government agencies.

The Extension Service at that time attempted to calculate what that cost might be from reports made by the States to the Post Office Department.

As best we could determine at that time, many of the State reports were made on the assumption that when penalty indicia had been made available to the counties, it was considered to have been used.

Mr. MARSHALL. You haven't any indication that the amount required in 1956 would be any more than in 1955, have you?

Mr. SCHRUBEN. We are not too certain about 1956. We are asking for the same amount because until we can get some evidence to show that that isn't correct, we feel that the 1955 amount will cover the costs. We feel that the same amount will cover the costs for 1956.

Getting back to explain this unobligated balance which occurred in fiscal year 1954, that was due primarily to the change in reporting the payments because following the passage of this law, a procedure was established whereby inventories were kept and reported by every mailing outlet, including all county offices.

Our estimate of penalty mail costs for 1954 was reduced to the extent the county offices had envelopes on hand that had been previously reported as being mailed, yet were not mailed. This error was corrected in 1954 when the inventory was taken.

VOLUME OF MAIL

We estimated that there would be 54 million pieces mailed in 1954. The actual count, taking into consideration this adjustment which is reasonable, was calculated as 48,509,540 pieces. This difference can be accounted for largely in the inventory count. In 1955 there will be no inventory adjustments to make because the beginning and ending inventories are being taken on the same basis.

You will be interested to know also that in 1954, when this law was first passed, the records required by the Post Office Department showed pieces only. It was not broken down into classes of mail, and we had no way of accurately calculating costs, based on pieces.

In 1954, we worked out with the Post Office Department a procedure whereby the cost of penalty mail would be calculated, from a scientific sampling of mailing experience.

Mr. MARSHALL. Could you tell me how many pieces you have mailed?

Mr. SCHRUBEN. This year?

Mr. MARSHALL. This year. That is this fiscal year.

Mr. SCHRUBEN. For the first 6 months of fiscal year 1955, there were 29,250,866 pieces of mail.

Mr. MARSHALL. Do you have any estimate as to how much this is costing your organization to keep track of this mail on the present basis?

Mr. SCHRUBEN. The costs are kept to a minimum because of the arrangement we have with the Post Office Department, for calculating the costs on the basis of the scientific survey previously mentioned. Early in 1954, after the law had been passed and after we had worked out the arrangement with the Post Office Department for calculating costs, 5 States, which is 10 percent of the total, were involved in a scientific survey. Ten percent of the counties in each of those States were involved in this same survey.

They kept daily records for 4 weeks. On the basis of the records that they kept in terms of actual mailings, and in terms of the classification of the mail that was sent, a national figure was arrived at.

We are checking our survey by taking records 1 week out of each quarter. We did that through 1954. The cost of calculating the postage is greatly reduced, compared to what it would have been if each of our mailing outlets would have had to have kept a daily record of the number of pieces actually mailed. Costs are determined by the application of percentage factors developed by our scientific samples to total volume of mailings as shown by procurement-inventory reports.

Mr. MARSHALL. How much have you spent to date on penalty mail?

Mr. SCHRUBEN. How much have we spent for fiscal 1955?

Mr. MARSHALL. Yes.

Mr. SCHRUBEN. The actual cost of mailings has amounted to $733,043 for the first 6 months of fiscal year 1955. We took a survey of the States at the beginning of this fiscal year to determine their estimate of the percentage of mailings that would be made each quarter. This was necessary because funds expended each quarter, must not exceed the quarterly allotment. At that time the States estimated that approximately 60 percent of the total mailings would occur during the third and fourth quarters.

The costs of penalty mail for the first 2 quarters actually took 38⅘ percent of the total money appropriated compared to an estimated 40 percent.

REDUCING PAPER WORK

Mr. MARSHALL. Mr. Ferguson, we enjoyed your presentation. Last year when you were before the committee, we discussed with you the matter of eliminating some of the paper work of the Extension Service. Do you have any comment that you would like to make at this time as to your success along those lines?

Mr. FERGUSON. We have been giving a lot of thought to it, and I think we are accomplishing some good. We are attempting to see what we can do to simplify our reporting system. We are concerned about anything we can do to reduce the amount of necessary paper work.

We did not this year print our annual report. We processed it and we made some saving. We have a committee working on reports.

We hope that we can reduce the load of reporting. At the same time we don't want to reduce it to the point where we can't measure what we are doing or where our records are not adequate for good supervision.

Mr. MARSHALL. This committee is still interested, I am sure, in any developments along that line.

Mr. FERGUSON. We thank you very much, Mr. Chairman and members of the committee.

TUESDAY, FEBRUARY 15, 1955.

FARMER COOPERATIVE SERVICE

WITNESSES

ERVIN L. PETERSON, ASSISTANT SECRETARY OF AGRICULTURE
JOSEPH G. KNAPP, ADMINISTRATOR, FARMER COOPERATIVE SERVICE

SALARIES AND EXPENSES

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$410,000	$408,000	$408,000
Unobligated balance transferred to "Administrative expenses, Farm Credit Administration" (reimbursements), pursuant to Public Law 202	−13,590		
Reimbursements from non-Federal sources	712		
Reimbursements from other accounts	17,177		
Total available for obligation	414,299	408,000	408,000
Unobligated balance, estimated savings	−9,836		
Obligations incurred	404,463	408,000	408,000
Comparative transfer to "Salaries and expenses, Federal Extension Service"	−2,000		
Total obligations	402,463	408,000	408,000

NOTE.—Reimbursements from non-Federal sources above are from refund of terminal-leave payments (5. U. S. C. 61b).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
Research and technical assistance for farmers' cooperatives	$398,876	$408,000	$408,000
Obligations Payable Out of Reimbursements From Other Accounts			
Research and technical assistance for farmers' cooperatives	3,587		
Total obligations	402,463	408,000	408,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Summary of Personal Services			
Total number of permanent positions	67	60	60
Average number of all employees	56	57	56
Number of employees at end of year	56	56	56
Average salaries and grades:			
General schedule grades:			
Average salary	$5,794	$5,699	$5,750
Average grade	GS-8.4	GS-8.2	GS-8.2
Personal service obligations:			
Permanent positions	$321,654	$323,750	$323,750
Regular pay in excess of 52-week base	1,246	1,250	1,250
Payment above basic rates	257		
Total personal service obligations	323,157	325,000	325,000
Direct Obligations			
01 Personal services	319,570	325,000	325,000
02 Travel	24,086	31,900	31,700
03 Transportation of things	674	800	800
04 Communication services	10,523	9,500	9,500
05 Rents and utility services	547		
06 Printing and reproduction	32,683	34,100	34,100
07 Other contractual services	879	1,800	2,000
Services performed by other agencies	2,234	1,000	1,000
08 Supplies and materials	2,913	2,600	2,600
09 Equipment	4,134	900	900
15 Taxes and assessments	633	400	400
Total direct obligations	398,876	408,000	408,000
Obligations Payable Out of Reimbursements From Other Accounts			
01 Personal services	3,587		
Total obligations	402,463	408,000	408,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$49,800	$41,651	$45,651
Adjustment in obligations of prior years	209,513		
Obligations incurred during the year	404,463	408,000	408,000
	663,776	449,651	453,651
Reimbursements	−17,889		
Obligated balance carried to certified claims account	−5		
Obligated balance carried forward	−41,651	−45,651	−46,651
Total expenditures	604,231	404,000	407,000
Expenditures are distributed as follows:			
Out of current authorizations	344,996	363,000	364,000
Out of prior authorizations	259,235	41,000	43,000

Mr. MARSHALL. The committee will come to order. We have before us the Farmer Cooperative Service.

BUDGET JUSTIFICATION DATA

Mr. MARSHALL. At this point we will insert pages 196 through 201 of the justification.

(The pages referred to follow:)

Purpose Statement

The Farmer Cooperative Serivce was established as a result of the Farm Credit Act of 1953 (Public Law 202, August 6, 1953), which transferred the research and technical assistance work for farmers' marketing, purchasing and service cooperatives, under the Cooperative Marketing Act of 1926 from the Farm Credit Administration to the Secretary of Agriculture. The Service conducts research and carries on related service and educational activities on problems of organization, financing, management, merchandising, product quality improvement, costs, efficiency, and membership. The Service works closely with cooperatives to help the 3 million farmers who are members of such organizations improve the operations of their businesses. It cooperates with farmers' associations, the Extension Service, land-grant colleges, banks for cooperatives, State departments of agriculture, and other agencies to bring about better understanding and application of sound cooperative principles and practices. The Service also advises other Federal agencies on problems relating to agricultural cooperatives.

The Service carries on its work through three program divisions—Marketing, Purchasing and Management Services. On November 30, 1954, the Service had 92 employees, 91 of whom were full-time and 1 part-time, all stationed in Washington, D. C.

Salaries and expenses:

Appropriated, 1955	$408,000
Budget estimate, 1956	408,000

Salaries and expenses

Appropriation Act, 1955, and base for 1956	$408,000
Budget estimate, 1956	408,000

Project statement

Project	1954	1955 (estimated)	1956 (estimated)
1. Research and technical assistance for farmers' cooperatives	$398,876	$408,000	$408,000
Unobligated balance	9,124		
Total available or estimate	408,000	408,000	408,000
Transferred to "Salaries and expenses, Federal Extension Service"	+2,000		
Total appropriation or estimate	410,000	408,000	

Status of Program

Current activities.—The Farmer Cooperative Service assists farmers through their 15,000 business cooperatives by providing research, advisory and educational services, and issues published material dealing with principles, practices and problems of these organizations. Research studies are conducted to provide basis information of value in assisting these cooperatives to improve their marketing, purchasing and general efficiency, which is an urgent need in the face of the present high cost of farm supplies and rising costs of marketing farm produce. The service and educational activities which are based on this research are prepared to help farmers and their cooperatives meet problems and improve their organizational structure and operating performance.

Selected examples of recent progress.—The Farmer Cooperative Service worked on 77 projects in 1954, and 80 will be initiated or continued during 1955 and 1956. During 1954 the Farmer Cooperative Service completed 80 projects or specific phases of projects for the benefit of farmers who are members or patrons of cooperatives. Research studies are generally national or regional in scope. The Service also conducts case studies of selected cooperatives which provide information of a basic character useful in providing advisory services to these and other cooperatives and in the preparation of educational material for general use. Many of these studies are made in collaboration with land-grant colleges.

The following projects conducted in 1954 are typical of the work of the Farmer Cooperative Service:

Methods of compensation and incentives for petroleum deliverymen of farmer cooperatives appraised: This study was undertaken at the request of petroleum

operatives affiliated with the National Council of Farmer Cooperatives to determine present compensation and incentive methods in use and to evaluate the influence of different methods on volume, delivery costs, credit performance, and employee turnover. Twenty-two regional cooperatives participated in this study by sending mail questionnaires to their local association members and providing fieldmen or auditors to obtain data from locals using different methods of compensation. This study reveals the advantages and disadvantages of different compensation methods in the distribution of petroleum products. The directors and managers of the more than 1,000 local cooperatives participating in this study are using its findings to give farmers better petroleum delivery service at lower cost.

Frozen food locker cooperatives in Illinois assisted: At the request of, and in cooperation with the Illinois Agricultural Association, a study of 31 county cooperatives operating 82 frozen food locker plants was made. The study provided cooperative managers and directors, and others with information on the operations and the relative efficiency of each association. The analyses showed the areas of operation in which certain associations were inefficient, or below average, and suggestions were made for improving operating efficiency, reducing costs, and increasing volume of processing and sales. Suggested performance yardsticks for measuring the efficiency of labor and capital utilization were developed. The results of this study are being used by directors and managers of these cooperatives as well as by similar cooperatives in other areas to bring about improvements in operations.

Statistics provided on farmers' marketing, purchasing, and related service cooperatives: The annual survey conducted by Farmer Cooperative Service is the only source of basic information on farmers' cooperatives throughout the United States. The statistics compiled are widely used by national farm organizations, Federal and State agencies, school and colleges, and students of agricultural cooperation in the United States and foreign countries. Recent improvements in procedures and analysis have resulted in more complete data and have greatly increased the usefulness of these statistics. The fact that 87 percent of the 10,166 marketing, purchasing, and related service associations cooperated fully in the latest survey is evidence of the high degree of interest cooperatives have in this work. These data provide valuable information concerning the scope, trends, and numbers of associations, membership and volume of business of farmers' cooperatives. Such information is essential to those interested in the work of farmer cooperatives, in evaluating progress and trends in their organization and operation, and in understanding their part in the Nation's free enterprise system.

Farm supply operations in a Western State unified: This is an example of service work where two regional cooperatives—one a centralized and the other a federated organization—requested assistance as to ways by which greater efficiency and economy could be obtained through unifying or coordinating their farm supply operations. After a short study, findings were presented and discussed with boards of directors of the two organizations. Results developed through the study are serving as a basis for developing better service on a more economical basis.

Ways to reduce costs suggested to dairy cooperatives: At the request of the Georgia Association of Dairy Cooperatives and the Georgia Extension Service, a study was made of the business operations of all 14 milk distributing cooperatives in Georgia. Financial statements were compared in detail and were evaluated to provide guidance to cooperative managements. Numerous suggestions relating to specific practices and procedures were made to enable the cooperatives to reduce costs. A supplementary study was made of the operations of the largest of these associations and further recommendations made to increase its efficiency. The principal findings of these studies are being prepared for publication in order to assist similar cooperatives in other States to serve their farmer-patrons more effectively.

Organization and operation of dry bean joint sales agency aided: The Western States Bean Cooperative is a joint sales agency owned and controlled by dry bean marketing associations in the Intermountain States. Directors of this regional cooperative requested a study of its operations. The study has been helpful not only to the regional and its member associations, but also to cooperatives in other dry bean producing regions. The report of this study discusses the organizational structure, operating methods and practices, and the progress and development of the cooperative. The information concerning this cooperative's operations has been of assistance to the several cooperative groups in determining the type of organization and plan of operation of a national bean marketing cooperative now getting underway.

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Report published on agricultural cooperatives in Western Europe: In view of country's increasing interest in foreign trade opportunities, the Farmer Coop tive Service has prepared a popular type publication describing the agricult cooperatives in Western Europe. This project is being conducted jointly w the Foreign Agricultural Service whose foreign service memorandum and spe reports serve as the principal sources of information. Supplementary data h been gathered also through the foreign mission officers to round out the infor tion desired. The report describes the individual cooperatives, the services t perform, and their relative importance in their respective fields. The report describes the relationships of these cooperatives with industry and with t respective governments. This report serves as a handy reference regarding cooperatives in Western Europe, and is of particular value to Government offici American cooperatives, and other business enterprises interested in develop trade outlets in Europe.

Statement of obligations under allotments and other funds

(Includes only those amounts which, by Nov. 30, 1954, were actually received programed for 1955 or 1956. Since work for other agencies is performed o service basis, at the request of those agencies and for their benefit, it is practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations 1954	Estimated obligations 1955	Estimat obligatio 1956
Working fund (advances from other agencies): Department of Agriculture, Agricultural Marketing Service—for marketing research activities	$233,503	$309,000	$323,
Obligations under reimbursements from governmental and other sources: Salaries and expenses—for detail of personnel to other Federal agencies	3,587		
Total obligations under allotments and other funds	237,090	309,000	323,

Mr. MARSHALL. I believe that you have a general statement, M Peterson.

Secretary PETERSON. Yes, Mr. Chairman.

GENERAL STATEMENT

Mr. Chairman, gentlemen of the committee, I am glad to submi this statement in behalf of the budget for the Farmer Cooperativ Service.

The Farmer Cooperative Service was set up on December 4, 195 to continue the work authorized under the Cooperative Marketin Act of 1926, formerly conducted by the Cooperative Research an Service Division of the Farm Credit Administration. The function of the Division were transferred to the jurisdiction of the Secretar of Agriculture by the Farm Credit Act of 1953, Public Law 202.

PLACEMENT IN THE DEPARTMENT

Since the Service works closely with the land-grant colleges, Fed eral and State extension services, and other Federal and State agencies the Service was logically placed in the Federal-States relations grou in the Department.

STRUCTURE

The Service is organized into three program divisions—Marketing Purchasing, and Management Services—and two staff divisions per forming information and administrative services.

AUTHORIZATION

Under the Cooperative Marketing Act of 1926, the Farmer Cooperative Service is authorized to perform research, educational, and service work for farmer cooperatives. These cooperating associations market agricultural products, purchase farm supplies, and perform other related services for their farmer members. The Service makes studies designed to improve the organization and operations of cooperatives, handles requests for assistance on special cooperative problems, and carries on educational work with cooperatives, State cooperative councils, colleges, and others interested in agricultural cooperation. It publishes reports on research studies for the general use of farmers and their cooperatives.

ACTIVITIES PERFORMED BY THE SERVICE

The Farmer Cooperative Service conducts research studies and service and educational activities designed to improve the operating efficiency of the 10,000 farmer cooperatives in this country which serve some 3 million farmers who market products or purchase supplies or services through their own business enterprises. This work covers problems relating to organization, financing, management, merchandising, product quality improvement, costs, general operating efficiency, and maintenance of active and informed membership.

Research studies are generally national or regional in scope. The Service also conducts case studies of selected cooperatives which provide information of a basic character useful in providing advisory services to other cooperatives and in the preparation of educational material for general use.

Research results are made available to farmers and their cooperatives and to other research workers through publications issued by the Service and through participation in meetings, clinics, and workshops. The Service performs educational work for the purpose of bringing about a better understanding and application of sound cooperative principles and practices. Findings from research are also used in assisting farmers and their cooperatives on specific problems.

SIGNIFICANCE OF WORK

Current need for program: Due to present price-cost conditions, farmer cooperatives need to improve their efficiency in marketing in order to increase returns by improved marketing practices, lowering costs, and expanding outlets for farmers' products. These organizations must also increase their effectiveness in purchasing farm supplies in order to assist farmers in reducing costs and improving farm efficiency.

Farmers must rely to a greater extent that ever before on their own self-help organizations because of the continually changing technological and economic forces affecting their industry. The basic work of the Service is to help farmers develop soundly organized and efficiently operated cooperatives which can help meet the impact of these changing conditions.

Relationship of program to other work in agricultural cooperation: The Farmer Cooperative Service coordinates its program with work

carried on in land-grant colleges, by Federal and State extension services, and by cooperatives, themselves, in order to place emphasis on problems requiring further research. Studies performed by the Service on a national or regional basis are widely used by the land-grant colleges and other educational agencies in their efforts to carry on further research on a local basis and in educational work.

Through the Farmer Cooperative Service the Department works toward a primary objective of assisting farmers to market their products efficiently, to purchase supplies at less cost, and to procure needed business services. This program enables farmers better to meet their needs and to strengthen their competitive position in a constantly changing agricultural industry.

Mr. Knapp, the Administrator of the Farmers Cooperative Service, is here with his assistants, and will further testify.

Mr. MARSHALL. Mr. Knapp, we will hear from you at this time.

FUNCTIONS OF FCS

Mr. KNAPP. Mr. Chairman and gentlemen, the Farmer Cooperative Service conducts research, educational, and service work for the primary benefit of farmers. We conduct studies relating to the cooperative marketing of farm products, cooperative purchasing of farm supplies, and cooperative supplying of farm business services. Each research project develops information of practical use in improving the organizational and operating efficiency of farmer cooperatives. Through our educational and service activities, we make research results available promptly to farmers and their cooperatives.

As Secretary Peterson has pointed out, we work with land-grant colleges, Federal and State extension services, State departments of agriculture, banks for cooperatives, and other interested Federal and State agencies. For example, we recently worked with the extension marketing specialist of the University of California, and the county agent in the Tule Lake region, in assisting barley growers in this new producing area to set up a cooperative elevator facility which will make possible sales throughout the year and thus increase returns annually by approximately $75,000. Our recommendations also resulted in a saving of $175,000 in initial plant construction costs.

In order to better coordinate our research work with similar work being done in the land-grant colleges, we recently cosponsored with the American Institute of Cooperation, a 3-day workshop on research in agricultural cooperation. This workshop, which was attended by representatives from 22 of the colleges and staff members of the Farmer Cooperative Service, will enable us to work more effectively on mutual problems in the future and avoid duplication of effort.

We work closely with the Agricultural Marketing Service on problems of marketing farm products, and also assist many agencies of the Government on matters relating to farmer cooperatives. For example, in 1954 we issued a report with the approval of the Internal Revenue Service for the purpose of helping farmer cooperatives meet new income tax regulations. Over 5,000 copies of this report have been distributed to cooperatives upon their request.

SCOPE AND IMPORTANCE OF FARMER COOPERATIVES

The scope and importance of farmer cooperatives in serving farmers not generally appreciated. Therefore, for your information I wish to present the following five charts which are based on our latest data.

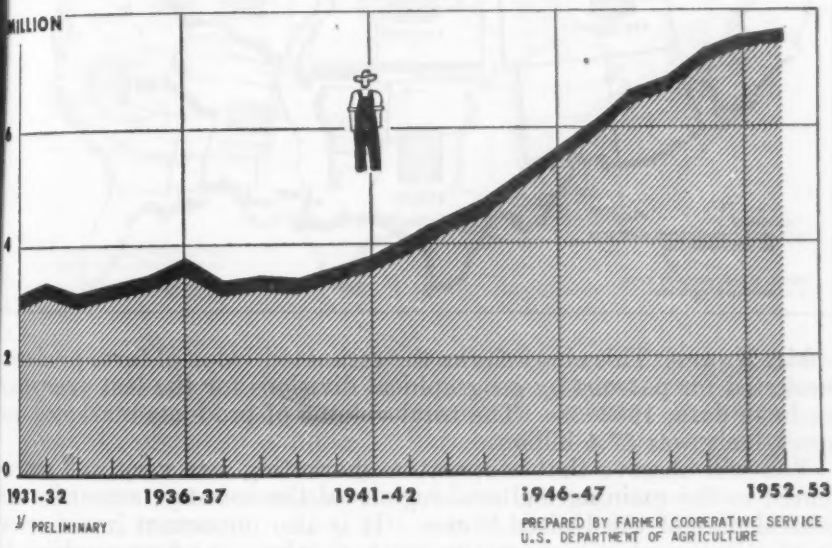
MEMBERSHIP IN FARMER COOPERATIVES

If I may, I would like to show you these charts and insert them in the record.

Mr. MARSHALL. Yes, sir. That will be satisfactory.

(The first chart is as follows:)

MEMBERSHIP IN FARMERS' MARKETING, PURCHASING, AND RELATED SERVICE COOPERATIVES, 1931-32 TO 1952-53 1/

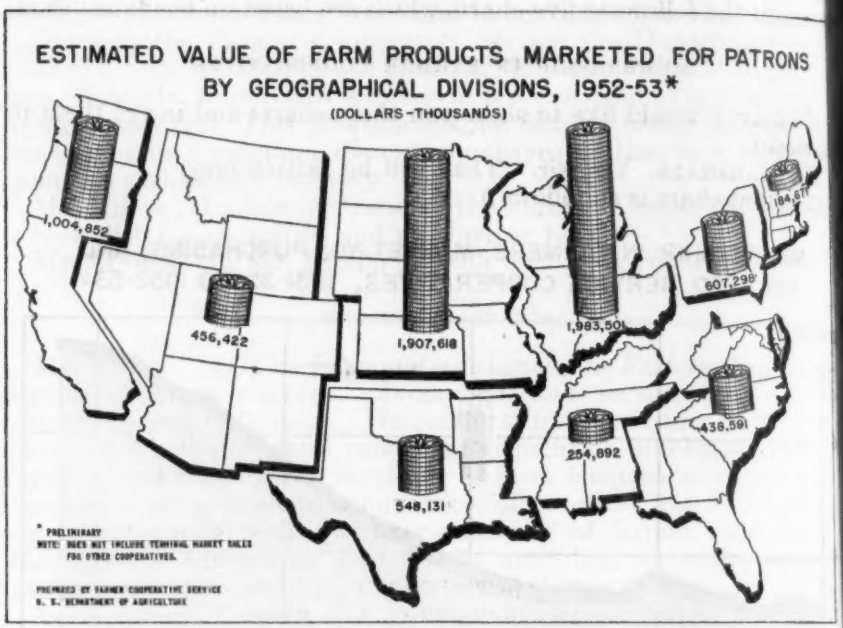


Mr. KNAPP. This first chart shows membership in farmers marketing, purchasing, and related services cooperatives from 1931–32 to 1952–53.

I would like to call your attention to the fact that the memberships at the end of the year 1952–53 stood at 7½ million. Now there are approximately 3 million farmers who are members of cooperatives, so on the average each of these 3 million farmers belongs to about 2½ associations.

Another thing is interesting in this chart. It shows that the intensity of membership increased slightly during the 1930's, but during the war period increased markedly. That I attribute to the fact that cooperatives proved themselves to be very useful in the war effort. There has been a continuation of that upward climb, up to the last year. It was not so great the last year, but even then it represents an increase in reported memberships of over 100,000.

Now, if you will pass to the second chart.
(The chart referred to is as follows:)

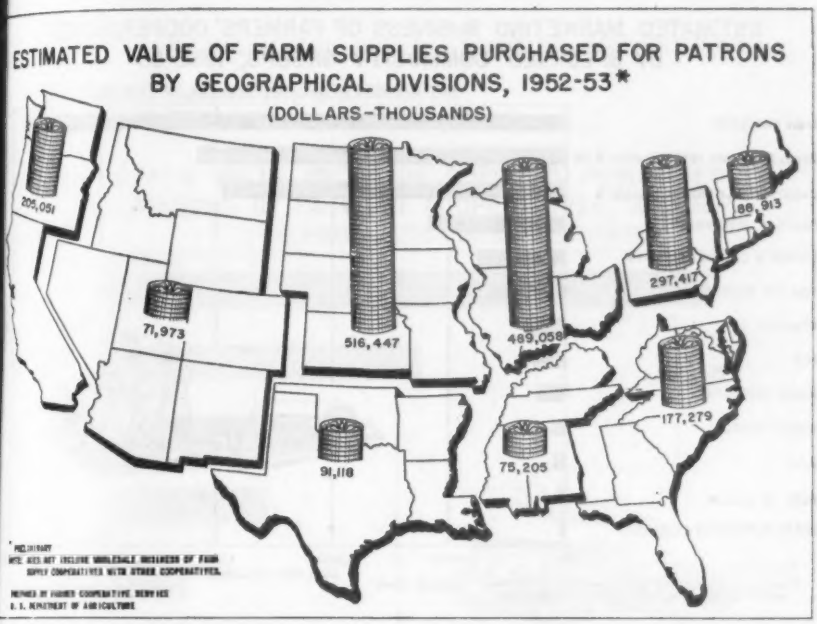


Mr. KNAPP. This chart shows the estimated value of farm products marketed for patrons by geographical divisions for the last year that we have data, 1952–53. The total volume of products marketed cooperatively was $7.4 billion.

You will observe that cooperative marketing was very well represented in the main agricultural regions of the country, especially the central part of the United States. It is also important in the three Pacific States, where cooperative marketing has been long established. It is less highly developed in the Southern States, although there is a significant amount of cooperative marketing in every region of the United States.

VALUE OF FARM SUPPLIES PURCHASED FOR PATRONS

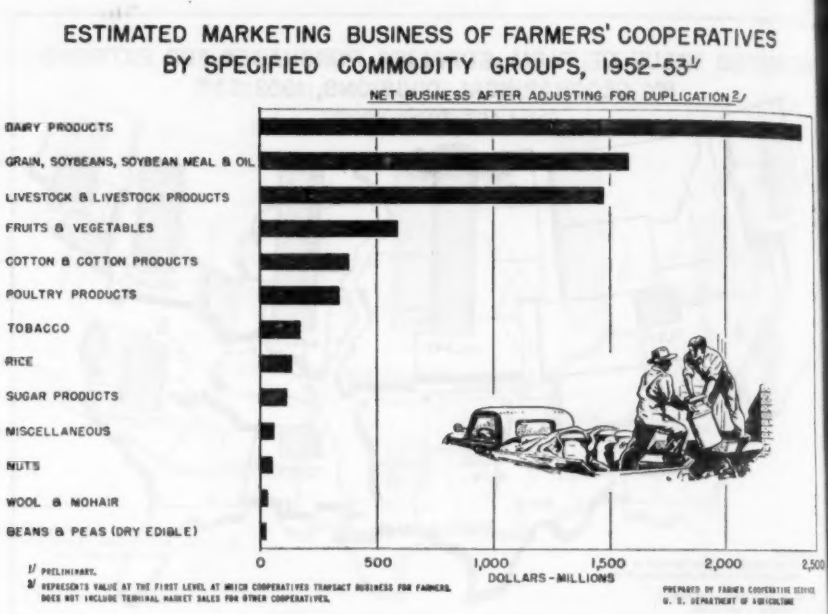
Now, we will pass to the next chart.
(The chart referred to is as follows:)



Mr. KNAPP. This third chart shows the estimated value of farm supplies purchased for patrons through these cooperatives by geographical divisions, for the last year for which we have data 1952–53. The total volume of supplies so purchased was $2 billion. You will see that the same central region which had a strong development of cooperative marketing also has had a strong development in cooperative purchasing. You will see that in the Northeastern region, cooperative purchasing is rather highly developed, and you will see also that in the Southern States it is less highly developed.

MARKETING BUSINESS OF COOPERATIVES BY COMMODITY

We will pass to the next chart.
(The chart referred to is as follows:)



Mr. KNAPP. This chart shows the estimated marketing business of farmers' cooperatives by specified commodity groups, 1952-53. You will see that the principal product, or line of products, marketed cooperatively, is dairy products, and the total amount of dairy products marketed cooperatively was $2.4 billion.

PERCENTAGE OF DAIRY PRODUCTS MARKETED THROUGH COOPERATIVES

Mr. MARSHALL. About what percentage of all dairy products is marketed through cooperatives?

Mr. KNAPP. We have it for butter and various commodities. Roughly, I would estimate 40 percent. I could check the record and put in the proper figure.

(The information referred to follows:)

About half of the milk sold from farms is consumed in fluid form and the remainder is used in manufactured dairy products. Farmers' cooperatives market about 40 percent of the fluid milk and an equal proportion of the milk used for manufacturing purposes.

Much of the fluid milk marketed by cooperatives is sold by bargaining associations which do not physically handle most of the milk they sell. Perhaps as much as 15 percent of the cooperatives' volume of fluid milk is physically handled at one or more marketing stages.

Cooperatives manufacture about 45 percent of the Nation's output of creamery butter, about 20 percent of the cheese, over 50 percent of the nonfat dry milk solids, and smaller proportions of other dairy products.

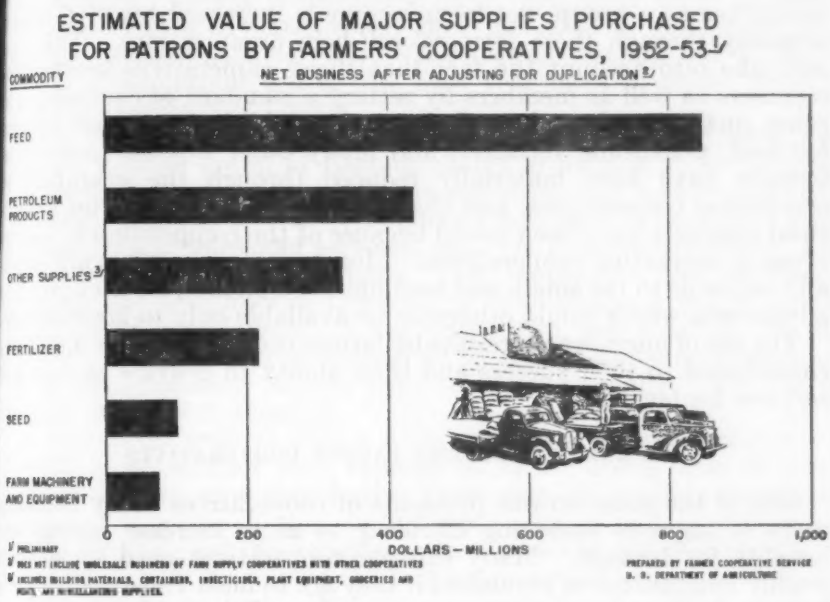
It is thus difficult to estimate the overall proportion of dairy products cooperatively marketed. About 40 percent of all milk leaving farms is marketed cooperatively at some stage in the marketing process.

Mr. KNAPP. The second commodity group in cooperative importance is grain, soybeans, and related products. Total volume repre-

ented is $1.6 billion. Livestock and livestock products represent 1½ billion; fruits and vegetables, represent $600 million; cotton and cotton products, $375 million; poultry products, $335 million; tobacco, $170 million; rice, $135 million; sugar products, $120 million, and smaller amounts for these other commodities.

SUPPLIES PURCHASED FOR PATRONS BY COMMODITIES

Now we will pass to the next chart.
(The chart referred to is as follows:)



Mr. KNAPP. This last chart shows the estimated value of major supplies purchased for patrons by farmers' cooperatives, 1952–53. You will see that feed is the most important supply purchased cooperatively. It represents $850 million. Petroleum products, $435 million; other supplies, which include building materials, containers, insecticides, equipment, and so forth over $335 million; fertilizer, $215 million; seed, about $100 million, and farm machinery and equipment about $75 million.

PERCENTAGE OF FARM MACHINERY PURCHASED THROUGH COOPERATIVES

Mr. MARSHALL. Could you tell me approximately the percentage of farm machinery and equipment that is purchased by farmers through cooperatives?

Mr. KNAPP. It would be less than 1 or 2 percent for that particular item. I will get that for the record.

(The information referred to follows:)

In 1953 farmers purchased farm machinery and equipment, including motor vehicles, with an estimated total value of $3.2 billion. Thus the amount purchased cooperatively is a little over 2 percent. Few farmers cooperatives handle

a full line of farm machinery and practically none handle trucks or automobile
A large proportion of the $75 million of farm machinery and equipment coopera
tively purchased represents such items as dairy and poultry equipment, ba
equipment, and water systems.

Mr. KNAPP. To continue, these charts indicate the extent to whic
farmers use their cooperative associations to meet their marketin
and purchasing problems. These off-farm problems affect a farmer
net income as directly as his efficiency in growing crops or in tendin
livestock. On the conservative assumption that the savings
farmers through their cooperative marketing and purchasing associa
tions amount to at least 1 percent of the total business volume of co
operatives as a group, net farm income is increased by $100 millio
annually through these farmers' self-help organizations. This doe
not take into account the fact that these cooperatives benefit non
members as well as members by setting a standard of competition i
price, quality, and service. It is a well-established fact that margin
for feed, petroleum, fertilizer, and many other supplies essential t
farmers have been materially reduced through the operations o
purchasing cooperatives, and that amounts paid farmers for agricul
tural products have been raised because of the competition of variou
types of marketing cooperatives. Moreover, cooperatives are especi
ally valuable to the small- and medium-sized farmer, for they give him
advantages which would otherwise be available only to large farmers.

The use of our research results by farmer cooperatives has materially
contributed to their success and their ability to provide savings and
services for farmers.

CURRENT PROBLEMS FACING COOPERATIVES

One of the most serious problems of cooperatives today is finding
ways to improve operating efficiency so as to increase savings and
benefits for farmers. Many existing cooperatives need to be thor-
oughly reorganized or revamped if they are to most constructively aid
farmers in meeting the serious cost and market problems which are
now affecting their industry. In many instances cooperatives need to
revitalize and strengthen their financial structures to enable them to
provide facilities and technical equipment necessary to adequately
serve farmers. Many cooperatives also have problems of finding
satisfactory market outlets. The present research and service work
of the Farmers Cooperative Service is directed to a practical solution
of such pressing problems.

RECENT WORK ACCOMPLISHMENTS

Some examples of our recent work accomplishments are shown in the
justification material before you. I should also like to illustrate by a
few examples how farmers are benefitted by our work.

In a recent study we helped a fertilizer cooperative in Arkansas
determine the best location for an acidulating plant. The association
estimates that the location selected as recommended by our study will
save farmers $50,000 annually compared to the sites being considered
before our study was made. That wrong location of facilities may
cost producers large amounts of money is indicated by the fact that a
poorly located cooperative soybean-processing plant had to be moved
recently at a cost of $1,500,000. If the plant had been well situated

In the first place much of this cost could have been avoided. The new plant was located in accordance with our recommendations, and savings in a few years will fully cover the cost of the new facilities. We have given special emphasis to methods of reducing transportation costs because they represent such a large share of marketing cost.

In cooperation with the Florida and Texas agricultural experiment stations we have been carrying on a study on cost of packing and processing citrus fruits. We have found that cooperatives and other concerns with integrated processing and packing operations saved 5 cents a box as compared with single-line firms. Partly as a result of this work, several cooperatives have integrated their operating methods. The study also shows how increases in size of packing plant can reduce packing costs. The realized savings due to larger volume of operations during the past year have benefited growers by many thousands of dollars.

In recent years we have worked closely with local egg marketing associations in a group of Eastern States in helping them establish a regional sales cooperative. This organization now serves more than 20,000 egg producers. Our recommendations have helped these associations expand sales and services, improve financing methods, and strengthen membership relations. This cooperative has materially benefited egg producers in this area in stabilizing egg prices in and between producing areas. It has opened up new markets for egg producers and now exports around 50 percent of its volume, amounting to approximately 75,000 cases of eggs annually. We helped develop this export demand.

It may be of interest that a midwestern cooperative pioneered in developing out-of-door milk vending in 1952. More than 20 dairy cooperatives are now distributing milk through vending machines. Twenty of these machines sold 206,000 quarts of milk in September 1954. We analyzed this experience as it occurred and pointed out to cooperatives how they could sell larger volumes of milk with this new merchandising method. We are continuing our studies of such operations and reporting results as fast as possible.

These examples show how we direct our work so as to help farmers meet vital problems in operating and strengthening their own self-help business organizations.

I shall be glad to answer any questions which you may have.

STABILIZATION OF EGG PRICES

Mr. MARSHALL. Mr. Knapp, in your statement you state:

> This cooperative has materially benefited egg producers in this area in stabilizing egg prices in and between producing areas.

Just what did you do?

Mr. KNAPP. We surveyed the operations of these local associations and studied their market outlets and their procedures, and then as an outgrowth of that helped the farmers and the farm leaders involved set up this sales organization, which was an overall organization through which they could pool their products, information, and know-how.

Mr. MARSHALL. Last fall, during the months of September, October, November, the egg market was badly demoralized. Did your

work with these egg associations give those producers any benefit during that chaotic condition of the market?

Mr. KNAPP. I would say, Mr. Chairman, that it certainly didn't hurt them, but put them in position to take advantage of every factor that would be to their help; but, on that, as to whether they were able to hold up prices in a demoralized egg marketing situation, I doubt whether they were able to do anything on that particular point.

ROLE OF COOPERATIVES DURING MARKET CRISIS

Mr. MARSHALL. The problem of bringing about a stable market during a period of crisis is too big a job for the cooperatives; is that correct?

Mr. KNAPP. Yes. I would say that. They could help on such jobs and the extent to which farmers are organized in these cooperatives can oftentimes help.

Mr. MARSHALL. They can help by making it possible for the operators jointly to take advantage of a little better marketing. But in the overall picture that is largely outside of the scope for which they were set up; is that right?

Mr. KNAPP. Yes. When it comes to a stabilization operation they are hardly in position to affect a total supply and demand situation.

WORK DONE WITH FUNDS ADVANCED BY AGRICULTURAL MARKETING SERVICE

Mr. MARSHALL. Will you discuss the work handled by the advance of funds from the Agricultural Marketing Service?

Mr. KNAPP. I would be very happy to. I understand that came up earlier in the hearings, and I have some material that was developed by Dr. Trelogan, Director of Marketing Research Division of the Agricultural Marketing Service, and myself. This material has been cleared within the Department.

I would like to provide this information, which I think explains the character of this research that we do.

May I first give you the statement and then make a comment?

When work under the Research and Marketing Act was initiated, no new agency was established. The administration of the program was located in the Office of the Secretary, with each project assigned to the existing departmental agency responsible for the type of work involved, and best equipped to carry out the work intended. This was considered the most feasible way to conduct the work efficiently, and to avoid duplication or overlapping with work already under way in the Department, as well as in State agencies participating in the program in association with the Department. Each budget statement clearly set forth the agencies carrying out the projects, and the RMA funds involved.

When the administration was transferred to the Agricultural Research Administration, this same procedure was continued. One of the participants in title II of the program from its inception was the Cooperative Research and Service Division of the Farm Credit Administration, which, in the reorganization of the Department, became the Farmer Cooperative Service, Research projects were assigned to this group to take advantage of the qualified research

personnel and know-how available in the unit that had engaged in marketing research since 1926.

A second important reason was to take advantage of the industry contacts available to the group resulting from its intimate working relations with cooperative marketing firms. This was regarded as important for four reasons: One, farmer cooperatives handled about one-fourth of all the agricultural products at one point or another as they move through the marketing system. Farmer cooperatives are primarily concerned with maximizing farmers' profits. Thus, any marketing research results beneficial to cooperatives directly benefit farmers.

Second, we are highly dependent upon voluntary assistance from operating firms to gain access to data for analysis and facilities for experimentation, and this group had established the necessary confidence and respect of management of these firms.

Third, employment of this group for contacts with cooperative marketing agencies for data and information minimizes potential duplication of such activities with the same firms by different research agencies.

Fourth, this group has built up excellent relationships with the land-grant colleges which multiplies the effectiveness of its marketing research work.

To be consistent with the objectives of the Agricultural Marketing Act (RMA title II), and to avoid supplementation of appropriations for purposes specifically provided for in other legislation, the policy was established that all research assigned to this group would be of a nature that would be useful to marketing agencies generally, and not provide benefits that would accrue only to cooperatives. That policy has been consistently maintained.

Moreover, the projects are coordinated with marketing research conducted by other agencies. In many instances they are joint projects in which this group obtains the information from cooperatives that other agencies are getting from noncooperative firms, so that a complete analysis can be facilitated.

In the reorganization of the Department that occurred simultaneously with the establishment of an independent Farm Credit Administration, the Cooperative Research and Service Division became the Farmer Cooperative Service. It was not incorporated with the Agricultural Marketing Service because of the distinctive objectives of the legislation providing for its work. Nevertheless, the basic reasons for its participation in the work provided for by the Agricultural Marketing Act continued to prevail, as it is generally agreed that research work should be done by the agency best able to perform it.

In addition, caution has been exercised in the reorganization not to disrupt the going marketing research program that had been worked out in accordance with advisory committee recommendations.

Consequently, arrangements have been made for the marketing research conducted by the agency pursuant to the Agricultural Marketing Act, to be administered by and in conjunction with the Marketing Research Division of the Agricultural Marketing Service. Each project goes through the same review and budget procedure as the other AMS marketing research projects and the budget presentation is made along with that of the Marketing Research Division.

The explanatory notes accompanying the budget estimates for 1955, the first fiscal year after the reorganization, showed the sums made available and budgeted to the Farmer Cooperative Service from the subappropriation, "Market research and agricultural estimates," on page 214 of volume I. The plan was also discussed in the hearings on the 1955 budget before the House Appropriations Agricultural Subcommittee in part II, pages 703 and 706. The budget for 1956 proposes a continuation of this plan.

Mr. Chairman, I would be very glad to discuss further the character of this marketing research work that we do.

Mr. MARSHALL. Mr. Knapp, do you feel a fund should be made available to you for carrying on this work?

Mr. KNAPP. Yes, I believe this; I subscribe to this statement which, in fact, I helped prepare. I feel very keenly that we are in position to render a very important service to American agriculture through the continuation of this work.

POSSIBILITY OF PAYMENT BY COOPERATIVES FOR SERVICES

Mr. MARSHALL. To what extent have you considered assessing co-ops for services performed for them? What has been your record along that line?

Mr. KNAPP. I will be very glad to discuss that. It has come up before, and I think it has been a matter of some misunderstanding at times.

It came up 4 years ago, and at that time I made quite a study of the situation and of the practices of land-grant colleges, et cetera, with regard to their similar relationships. Our work is very similar to the work carried on by an agricultural experiment station, and in performing research or service for farmers and their organizations, no charge is generally made by such institutions.

As a matter of fact, a high proportion of our studies are carried on, just as the barley study I mentioned, as an activity in cooperation with an extension service or with an experiment station.

From the standpoint of the charging for a service, we have found no way in which the type of work we do could be assessed. It is similar to the problem of a county agent who works with a farmer. A farmer has a problem. Can the county agent say "I won't come out to help you on the problem unless you are going to pay some sort of fee"?

Our work is made for a wide number of cooperatives. There are very few of our studies that solely benefit the association immediately served. We may make a study to help some association, but in the course of making that study we obtain information that can be used to help other associations with like problems. So frequently an association asks us for help and we are able to provide it with assistance immediately because of a previous study made for some other organization. Which organization should pay for the service? It would be a difficult thing to determine on a fair basis.

I would like to stress this fact, that most of our studies are made to help on a general problem of a large number of cooperatives. For example, we are now making a general study of the financing of cooperatives in which we are obtaining data from about 1,000 associations of varying size and type. This study is not made for the

benefit of any particular association or group of associations. It is made to improve the functioning of farmer cooperatives in general. I would say that over 80 percent of our studies are of this general research type. The remaining 20 percent of our studies are made to assist farmers in an association or group of associations but the results are made available to other groups of farmers and their organizations having comparable problems.

Then, another point—our studies are all public. The information is available to the public. They are not specialized management surveys that are made strictly for the benefit of some organization. Now, we may help an organization with a particular problem, which is of special interest to it, but there are no secrets in connection with our work. Of course, if we are helping or advising an association, we would not publish the detailed character of the advice any more than we would broadly distribute copies of all of our correspondence.

Now, most of our studies are made for small organizations, and they have no facilities to pay for research. They won't call for assistance if there is a charge involved. If a charge were made, it would simply mean that the help would not be given and the cooperatives would not be strengthened.

Mr. MARSHALL. Have you been reimbursed for any services?

Mr. KNAPP. No. We have not, but I do wish to say this: We have made a strenuous effort, especially after this matter came up 4 years ago, wherever possible to encourage cooperatives to assist us by helping in any way that will reduce the cost of the research.

I can give you an illustration that I mentioned last year, but I would like to repeat it again, because it is a good example.

The petroleum cooperatives in this country are joined together in association with the National Council of Farmer Cooperatives, and they have an annual meeting at the time of the meetings of the National Council.

Two years ago, this petroleum group invited me to participate in their meeting, and they raised the question of how we could help them on some pressing problems that they had, and there were several research problems on which they needed assistance. I indicated that our funds were very limited. However, we did have one experienced man who could devote some time to this matter.

As a result, they set up a committee to help design a project. We had correspondence back and forth, and meetings with this committee, and we finally worked out a project. Under the plan for the project, the schedule was to be worked out by us and approved by the Bureau of the Budget. The information was to be obtained through the efforts of the fieldmen of these associations, and through the voluntary provision of information from the local associations. We estimated that with this help and at a cost to us of five or six thousand dollars—I have not the exact cost figures—we could carry on a study that would cost more than double this amount, if we were to undertake the entire project. Moreover, we would have this advantage, Mr. Chairman, that these data would be gathered simultaneously from various parts of the United States so that we would have this information more quickly and could thus complete the study more promptly for the benefit of the organizations.

In connection with that project, we have made four different preliminary reports to the associations concerned. Over 1,000 local

associations have provided information to us, and 22 of the regional petroleum associations have assisted us in the ways that I have described. We think that as a result of this work which was a study of how to improve the efficiency of the delivery function, the moving of petroleum from the local bulk plant out to the farms has been greatly improved because 3 or 4 of the regional associations have adopted incentive payment plans since our study was initiated 2 years ago.

I could go into the economics of it. A number of years ago the primary method of paying deliverymen who took gasoline and other petroleum products out to the farms was on a commission basis. Then a number of associations began to operate on a salary basis, especially in some of the Eastern States, where the margins were not quite so large, and they developed programs along that line. Now, we are watching the development of a combination salary-plus commission, or an incentive type of employee compensation. This gives the association better management control over the operations, and satisfies the deliverymen, too, so it makes for efficiency and will reduce the cost of delivering petroleum products to farmers.

Mr. MARSHALL. Mr. Andersen?

Mr. ANDERSEN. No questions, Mr. Chairman, except I would like to make a comment. We are glad to see these gentlemen once more before us; in past years we have had the opportunity of going pretty well into this subject, and I feel that a good job is being done in protecting the interest of the cooperatives and the farmers by this agency.

Mr. MARSHALL. Mr. Vursell?

Mr. VURSELL. Mr. Chairman, I didn't get to hear the testimony, so I am not in position to ask any questions at this time.

Mr. MARSHALL. Thank you, Mr. Knapp.

Mr. KNAPP. Thank you, Mr. Chairman.

Mr. MARSHALL. This concludes the hearing for today. The committee stands adjourned until 1 o'clock tomorrow.

WEDNESDAY, FEBRUARY 16, 1955.

AGRICULTURAL CONSERVATION PROGRAM SERVICE

WITNESSES

ERVIN L. PETERSON, ASSISTANT SECRETARY OF AGRICULTURE
FRED G. RITCHIE, ACTING ADMINISTRATOR, AGRICULTURAL CONSERVATION PROGRAM SERVICE

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$226,982,000	$191,700,000	$250,000,000
Reduction due to availability of balances under 1953 program			34,000,000
Adjusted appropriation or estimate (1954 and 1955, definite; 1956, indefinite)	226,982,000	191,700,000	216,000,000
Unobligated balance brought forward	5,464,902	3,292,934	
Unobligated balance transferred to "Foot-and-mouth and other contagious diseases of animals and poultry, Agricultural Research Administration," pursuant to 67 Stat. 223 and Public Law 437	−2,172,134	−1,197,481	
Recovery of prior year obligations	148,608	227,668	
Reimbursements from non-Federal sources	328,083	300,000	300,000
Reimbursements from other accounts	120,063	144,000	144,000
Reimbursements from Commodity Credit Corporation	30,143,881	43,450,000	43,450,000
Total available for obligation	261,015,403	237,917,121	259,894,000
Unobligated balance carried forward	−3,292,934		
Unobligated balance, estimated savings		−2,311,121	
Obligations incurred	257,722,469	235,606,000	259,894,000

NOTE.—There are available as a credit to the appropriation receipts from sales of aerial photographs (7 U. S. C. 1387).

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Direct Obligations			
1. Cost-sharing assistance to farmers	$195,315,659	$209,006,119	$250,000,000
2. Emergency wind control measures	15,000,000		
3. Farmland restoration in flood-stricken areas	148,442	12,000	
4. Payments of loan from Commodity Credit Corporation	46,810,222	26,143,881	9,450,000
5. Obligations under reimbursements from non-Federal sources	328,083	300,000	300,000
Total direct obligations	257,602,406	235,462,000	259,750,000
Obligations Payable Out of Reimbursements From Other Accounts			
1. Cost-sharing assistance to farmers	120,063	144,000	144,000
Obligations incurred	257,722,469	235,606,000	259,894,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estim
AGRICULTURAL CONSERVATION PROGRAM SERVICE			
Total number of permanent positions	65	64	
Average number of all employees	50	54	
Number of employees at end of year	55	58	
Average salaries and grades:			
General schedule grades:			
Average salary	$5,485	$5,554	$5,
Average grade	GS-7.7	GS-7.7	GS-
Direct Obligations			
01 Personal services:			
Permanent positions	$300,909	$319,342	$331,
Regular pay in excess of 52-week base	1,204	1,208	1,
Total personal services	302,113	320,550	332,
02 Travel	20,789	25,900	31,
03 Transportation of things	395	400	
04 Communication services	4,587	6,500	6,
06 Printing and reproduction	4,974	6,036	7,
07 Other contractual services	6,453	4,400	5,
Advanced to "Local administration, sec. 388, Agricultural Adjustment Act of 1938, Agriculture," pursuant to 7. U. S. C. 1388	19,263,622	18,378,200	18,378,
08 Supplies and materials	2,733	2,700	2,
09 Equipment	160	1,240	2,
11 Grants, subsidies, and contributions	186,118,036	185,802,119	226,296,
15 Taxes and assessments	220	750	
Not distributed by objects: Repayment of loan from Commodity Credit Corporation	46,810,222	26,143,881	9,450,
Total direct obligations	252,534,313	230,692,676	254,513,
Obligations Payable Out of Reimbursements From Other Accounts			
11 Grants, subsidies, and contributions	120,063	144,000	144,
Obligations incurred	252,654,376	230,836,676	254,657,
ALLOTMENT TO COMMODITY STABILIZATION SERVICE			
Total number of permanent positions	924	900	
Full-time equivalent of all other positions	25	21	
Average number of all employees	761	770	
Number of employees at end of year	872	851	
Average salaries and grades:			
General schedule grades:			
Average salary	$4,076	$4,069	$4,
Average grade	GS-5.7	GS-5.8	GS-
01 Personal services:			
Permanent positions	$3,222,200	$3,245,549	$3,628,
Positions other than permanent	154,283	130,202	125,
Regular pay in excess of 52-week base	11,497	11,060	12,
Payment above basic rates	23,039	29,516	28,
Total personal services	3,411,019	3,416,327	3,794,
02 Travel	455,478	523,048	593,
03 Transportation of things	42,074	40,130	42,
04 Communication services	116,667	109,102	122,
05 Rents and utility services	110,241	109,819	109,
06 Printing and reproduction	8,974	43,605	43,
07 Other contractual services	156,532	24,545	27,
Services performed by other agencies	131,473	800	
08 Supplies and materials	322,130	330,255	337,
09 Equipment	42,592	28,035	31,
13 Refunds, awards, and indemnities: Awards for employee suggestions	4,431	3,050	3,
15 Taxes and assessments	9,177	12,608	13,
Obligations incurred	4,810,788	4,641,324	5,120,
ALLOTMENT TO FOREST SERVICE			
Total number of permanent positions	19	20	
Full-time equivalent of all other positions		1	
Average number of all employees	19	21	
Number of employees at end of year	16	16	

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
Obligations Payable Out of Reimbursements From Other Accounts—Continued			
ALLOTMENT TO FOREST SERVICE—continued			
erage salaries and grades:			
General schedule grades:			
Average salary	$4,676	$4,524	$4,524
Average grade	GS–6.7	GS–6.5	GS–6.5
Personal services:			
Permanent positions	$86,913	$93,362	$93,362
Positions other than permanent		1,454	1,454
Regular pay in excess of 52-week base	330	339	339
Total personal services	87,243	95,155	95,155
Travel	4,381	4,250	4,250
Transportation of things	47	210	210
Communication services	827	825	825
Rents and utility services	3,634	3,600	3,600
Other contractual services	872	510	510
Supplies and materials	10,990	10,950	10,950
Equipment	810	500	500
Taxes and assessments	59		
Obligations incurred	108,863	116,000	116,000
ALLOTMENT TO SOIL CONSERVATION SERVICE			
tal number of permanent positions	7		
ll-time equivalent of all other positions	9	1	
erage number of all employees	22	1	
mber of employees at end of year	1		
erage salaries and grades:			
General schedule grades:			
Average salary	$4,810		
Average grade	GS–7.6		
Personal services:			
Permanent positions	$99,674	$5,973	
Positions other than permanent	25,620	1,776	
Regular pay in excess of 52-week base	17		
Payment above basic rates	3,771		
Total personal services	129,082	7,749	
Travel	2,728	1,150	
Communication services	741	100	
Rents and utility services	652	125	
Printing and reproduction	19		
Other contractual services	4,724	2,033	
Supplies and materials	9,941	800	
Taxes and assessments	555	43	
Obligations incurred	148,442	12,000	
SUMMARY			
tal number of permanent positions	1,015	984	1,075
ll-time equivalent of all other positions	34	23	20
erage number of all employees	852	846	931
mber of employees at end of year	943	925	997
erage salaries and grades:			
General schedule grades:			
Average salary	$4,403	$4,241	$4,294
Average grade	GS–5.9	GS–5.4	GS–5.4
Direct Obligations			
Personal services:			
Permanent positions	$3,709,696	$3,664,226	$4,052,582
Positions other than permanent	179,903	133,432	127,139
Regular pay in excess of 52-week base	13,048	12,607	13,907
Payment above basic rates	26,810	29,516	28,216
Total personal services	3,929,457	3,839,781	4,221,844
Travel	483,376	554,348	629,106
Transportation of things	42,516	40,740	43,560
Communication services	122,822	116,527	130,215
Rents and utility services	114,527	113,544	113,420
Printing and reproduction	13,967	49,641	50,600

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
Direct Obligations—Continued			
07 Other contractual services	$168,581	$31,488	$33,564
Advanced to "Local administration, sec. 388, Agricultural Adjustment Act of 1938, Agriculture," pursuant to 7 U. S. C. 1388	19,263,622	18,378,200	18,378,200
Services performed by other agencies	131,473	800	800
08 Supplies and materials	345,794	344,705	350,751
09 Equipment	43,562	29,775	34,470
11 Grants, subsidies, and contributions	186,118,036	185,802,119	226,296,000
13 Refunds, awards, and indemnities:			
Awards for employee suggestions	4,431	3,050	3,000
15 Taxes and assessments	10,020	13,401	14,470
Not distributed by objects: Repayment of loan from Commodity Credit Corporation	46,810,222	26,143,881	9,450,000
Total direct obligations	257,602,406	235,462,000	259,730,000
Obligations Payable Out of Reimbursements From Other Accounts			
11 Grants, subsidies, and contributions	120,063	144,000	144,000
Obligations incurred	257,722,469	235,606,000	259,894,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$49,649,326	$102,964,138	$104,448,470
Obligations incurred during the year	257,722,469	235,606,000	259,894,000
	307,371,795	338,570,138	364,342,470
Adjustment in obligations of prior years	−1,972,653	−227,668	
Reimbursements:			
Net loan from Commodity Credit Corporation	−30,143,881	−43,450,000	−43,450,000
Other	−448,146	−444,000	−444,000
Obligated balance carried to certified claims account	−507,726		
Obligated balance carried forward	−102,964,138	−104,448,470	−108,448,470
Total expenditures	171,335,251	190,000,000	212,000,000
Expenditures are distributed as follows:			
Out of current authorizations	171,335,251	100,000,000	122,000,000
Out of prior authorizations		90,000,000	90,000,000

SUMMARY JUSTIFICATION DATA

Mr. WHITTEN. The committee will come to order.

I would like to have pages 277 through 281 and 287 through 293 of the justification inserted in the record at this point.

(The information referred to follows:)

PURPOSE STATEMENT

The agricultural conservation program is authorized under the provisions of sections 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, as amended.

The purposes of the act include (1) restoring and improving soil fertility; (2) reducing erosion caused by wind and water; and (3) conserving water on land. To effectuate these purposes, the agricultural conservation program offers cost-sharing assistance to individual farmers and ranchers in all of the 48 States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands for carrying out approved soil-building and soil-and-water conserving practices on their farms. Allocations are made to States based upon conservation needs.

Cost-sharing assistance is offered only for the practices considered necessary to meet the most urgently needed conservation problems of the farm, which would

not otherwise be carried out to the extent needed. To be eligible for cost-sharing the farmer must make application therefor before beginning the practice.

Conservation measures for which cost-sharing assistance is offered, include practices primarily for:

1. Establishment of permanent protective cover.
2. Improvement and protection of established vegetative cover.
3. Conservation and disposal of water.
4. Establishment of temporary vegetative cover.
5. Temporary protection of soil from wind and water erosion.
6. Similar practices with limited area applicability.

Cost-sharing assistance is available in the form of:

1. Partial payment of the purchase price of materials and services needed by the farmer for carrying out approved practices; or
2. Partial reimbursement to farmers who have carried out approved practices at their own expense. Materials and services are obtained through local private sources where practicable.

Rates of assistance vary by practices and by States and areas so as to make the most effective use of available funds. The average rate of assistance for all practice is less than one-half the cost of performing the practice. The farmer bears the balance of the cost and in addition, supplies the labor necessary to carry out the practice.

	Appropriated, 1955	Budget estimate, 1956
Appropriated funds	$191,700,000	$250,000,000
Less estimated reduction due to availability of balances under the 1953 program		−34,000,000
Net appropriation	191,700,000	216,000,000

Agricultural conservation program

	On direct appropriation basis	On basis of program authorization
Appropriation Act, 1955, and base for 1956	[1] $191,700,000	[2] $195,000,000
Budget estimate, 1956	250,000,000	
Less estimated reduction due to availability of balances under the 1953 program	−34,000,000	
Net budget estimate	216,000,000	[3] 250,000,000
Increase	+24,300,000	+55,000,000

[1] Excludes prior-year balance of $2,323,121 for farmland restoration program in flood-stricken areas, of which it is estimated that $2,311,121 will be returned to the surplus fund of the treasury. These balances expired for obligation purposes on Dec. 31, 1954.

[2] Advance authorization contained in the 1954 Agricultural Appropriation Act. Excludes supplemental appropriation of $15 million (Public Law 357, 83d Cong., approved May 11, 1954), for making payments to farmers carrying out emergency wind control measures under the 1954 agricultural conservation program.

[3] Advance authorization contained in the 1955 Department of Agriculture and Farm Credit Administration Appropriation Act.

Summary of increases, 1956, on basis of program authorization

Increase in cost-sharing assistance to farmers in carrying out conservation measures in the 1955 crop-year program compared with the 1954 program	+$54,500,000
Increase in operating expenses of agricultural stabilization and conservation State offices	+500,000

The Agricultural conservation program is operated on a calendar (crop) year basis. The 1954 program which closed December 31, 1954, was financed from funds provided in the 1955 Department of Agriculture and Farm Credit Administration Appropriation Act. In that act, the Congress authorized the formulation and administration of a 1955 agricultural conservation program amounting to $250 million for which the 1956 budget estimate is submitted.

Project statement

Project	1953 program (fiscal year 1954, estimated)	1954 program (fiscal year 1955, estimated)	Increases	1955 program (fiscal year 1956, estimated)
Agricultural conservation program:				
Cost-sharing assistance to farmers	$186,794,856	* $171,486,000	+$54,500,000	$225,986,000
Other program expenses	1,008,667	1,014,000		1,014,000
County committee operating expenses:				
ASC county committees	19,263,622	18,378,200		18,378,200
Forest Service	95,428	101,800		101,800
National and State Office operating expenses	4,181,600	4,020,000	+500,000	4,520,000
Total, program or authorization	211,344,173	195,000,000	+55,000,000	250,000,000
Adjustments (to fiscal year basis):				
Difference in amount used for advance purchase of conservation materials and services from prior fiscal year appropriation for current program and amount used for advance purchase of conservation materials and services from current fiscal year appropriation for ensuing calendar year	−16,028,514	+14,006,119	−14,006,119	
Emergency wind-control measures, supplemental appropriation (Public Law 357)	+15,000,000			
Received by loan from CCC	−30,143,881	−43,450,000		−43,450,000
Repayment of loan from CCC	+46,810,222	+26,143,881	−16,693,881	+9,450,000
Total appropriation or estimate	226,982,000	191,700,000	+24,300,000	216,000,000

* Excludes supplemental appropriation of $15 million (Public Law 357, 83d Cong., approved May 11, 1954) for making payments to farmers carrying out emergency wind-control measures under the 1954 agricultural conservation program.

ADVANCE AUTHORIZATION FOR THE 1956 AGRICULTURAL CONSERVATION PROGRAM

An authorization of $175 million is proposed for the 1956 ACP. This authorization will permit a program of approximately the same level and scope as the programs authorized for 1954 and 1955, exclusive of the increased funds authorized for 1955 for additional conservation work on diverted acres and for 1954 for emergency measures in the Dust Bowl area. This can be done with a $175 million authorization if small payment increases are not required. Language is proposed in the 1956 budget which would make the small payment increase provision inoperative for 1956 and a recommendation is also being made to amend the basic legislation by repeal of the small payment increase provision in section 8 (e) of the Soil Conservation and Domestic Allotment Act.

It is contemplated that the national agricultural conservation program for 1956 will be quite similar to the program for 1955. However, the policy of requesting each State to make recommendations on a 1956 national program will be continued, which may bring forth recommendations justifying program changes. It is not contemplated that any change will be made in the method used to distribute program funds among States. The formula which has been set forth by Congress in program authorizations for the past several years is now included in section 15 of the Soil Conservation and Domestic Allotment Act, as amended by the Agricultural Act of 1954.

STATUS OF PROGRAM

Conservation of agricultural soil and water resources is recognized as essential to the future well-being of the Nation. Not only is it essential to assure a continued supply of food, fiber, and shelter for an increasing population, but also to supply the largest part of the raw materials that go into the expanding economy of the Nation. In 1952 over 70 percent of the value of all raw material that was produced for the economy of the country came from its fields, pastures and forests.[1] Transporting, processing, financing, and handling these raw materials so as to make them useful and supply them where they are needed makes up a large part of all the business and commerce that furnishes the livelihood for the Nation's nonfarm population. Because of their interests in food, fiber, and shelter and a

[1] From U. S. Department of Commerce, Working Paper No. 1, 1954.

continued healthy economy, nonfarm people have perhaps an even greater interest in conservation of soil and water resources than farmers themselves.

Conservation work costs money. There are few, if any, conservation measures that do not require an initial investment in materials, in power, or in labor. Recovery of investment in many needed conservation measures is relatively slow as compared to investment of capital in measures necessary for production of things to sell and produce income. One of the problems of carrying out conservation measures is that the more enduring conservation measures are usually more costly and require a longer period of time before a return on the additional capital investment is realized. Capital investment per worker on farms is high. In 1953 it was $18,718 per worker in agriculture as compared to $9,867 per worker in manufacturing.[2] In 1953 the per capita net farm income (including income from farming and from farm sources) was $882 as compared to $1,898 for the nonfarm population.[3]

It is with this background of cost and returns from conservation work and the public's dependence upon the conservation of soil and water resources that Federal cost-sharing of conservation practices on individual farms is offered. Research and experimental work have developed and are developing means by which soil and water resources can be conserved. Educational work is teaching the value and need for conservation work. Technical services help determine the conservation measures that are needed and furnish engineering and technical services to correctly install them. Federal cost sharing by the agricultural conservation program helps overcome the economic barriers to carrying out conservation measures. The basic purpose of the agricultural conservation program is to protect the public's interest in the Nation's soil and water resources by affording a means by which all the people may bear a part of the costs of those measures that would not otherwise be carried out at the rate needed.

CHANGES IN THE AGRICULTURAL CONSERVATION PROGRAM

The agricultural conservation program in 1954 was directed toward development of practices that were more permanent in their effects; however, it was not limited to such practices. It also emphasized the complete treatment of a particular conservation problem. Changes made in practices consisted mainly of combining into one practice all of the elements needed for the complete practice. Another change was to offer the farmer a definite and exact amount of cost-sharing on a particular job rather than the possibility or chance that he might get some or more financial help if other farmers fall down on their conservation undertakings.

PROGRAM DEVELOPMENT

Development of the agricultural conservation program begins at the local or county level. The county agricultural stabilization and conservation committee, with the assistance of the county agent and representatives of the Soil Conservation Service, Forest Service, and other local agencies interested in conservation, makes recommendations to the State agricultural conservation and stabilization committee. These are summarized by the State committee and used as the basis for the State extension service, Soil Conservation Service, Forest Service, the State agricultural stabilization and conservation committee and other agencies interested in conservation to formulate joint recommendations to the agricultural conservation program service in Washington.

From these recommendations, the agricultural conservation program service, Soil Conservation Service and Forest Service develop and recommend to the Secretary a national program. State and county committees then develop their programs within the structure of the national program approved by the Secretary.

PROGRAM ADMINISTRATION

The agricultural conservation program is administered locally by county agricultural stabilization and conservation committees. These committees are made up of resident farmers elected by the farmers they serve. County committees are supervised by State agricultural stabilization and conservation committees consisting of resident farmers appointed by the Secretary of Agriculture. The local county agent is an ex officio member of the county committee and the State director of extension holds a like position on the State committee. State, county and community committeemen are assigned the responsibility

[2] U. S. Department of Agriculture, ARS, 1953 Agricultural Appropriation Hearings (House) pt. I, p. 174.
[3] U. S. Department of Agriculture, AMS, the Farm Income Situation, March 1954.

for the field administration of the program and work directly with farmers in utilizing program assistance in an effort to get the greatest volume of conservation performed on the land by the farmers themselves. The responsibility for technical determinations regarding permanent type practices in the field is assigned to the Soil Conservation Service except for forestry practices, responsibility for which is assigned to the Forest Service.

Participation under the 1953 agricultural conservation program

Item	Unit	Total [1]	Participating farms [1]	Portion participating
				Percent
Farms	Number	5,507,990	2,012,788	37
Farmland	1,000 acres	1,242,117	573,054	46
Cropland	do	476,872	253,434	53
Noncrop pasture and range	do	558,285	225,743	40

[1] Includes United States, Alaska, Hawaii, Puerto Rico, and Virgin Islands.

PROGRAM OF 1954

The 1954 agricultural conservation program was carried out with emphasis upon permanent and semipermanent practices consistent with the authorization provided by Congress in the Agricultural Appropriation Act of 1954. Particular emphasis has been placed on those practices on farms which are essential in the public interest and which farmers or ranchers would not carry out to the desired extent with their own resources.

Soil-conserving land-use adjustments and the establishment of improved crop rotations were stressed. A combination of cost-sharing on seed, lime, and fertilizer essential to the success of desirable crop rotations was provided in the program. The initial improvement consisting of renovation, application of minerals and correction of lime deficiencies for existing grasslands was also encouraged. Local responsibility for selecting practices from the national program to meet within-county conservation problems was continued, and authority was provided for developing additional practices to meet special local conditions not provided for in the national program.

The extremely dry weather in the summer and fall of 1953 which continued into the spring of 1954 was a deterrent to the use of some seriously needed practices in a part of the country. In a period of decreased income there is a great effort on the part of farmers to husband their limited resources. The net result of these factors may have caused a decrease in the number of farms participating in 1954.

EMERGENCY WIND EROSION PRACTICES

The extended drought of 1953 resulted in a wide area of severe wind erosion damage during the spring of 1954. The area included counties in six States in the Southern and Central Great Plains. Funds available in the normal distribution of 1954 funds to these counties were found inadequate to meet the wind-erosion problem of the area. The 1954 program was increased by an appropriation of $15 million for wind erosion control practices in the counties recommended by the State Governors of the States affected, and approved by the Secretary. A new practice was added to the program which provided assistance to farmers to carry out emergency wind erosion control measures in designated counties. The total amount of assistance under this practice could not in any event exceed $1.25 per acre but was limited administratively to 50 percent of the cost of the practice. An exception was made for hardship cases which, upon recommendation of the county committee and approval of the State committee, could receive assistance up to the full cost of the measure, not to exceed $1.25 per acre.

AGRICULTURAL CONSERVATION PROGRAMS PROVISIONS APPLICABLE TO DROUGHT DAMAGED AREAS

Both the 1954 and 1955 agricultural conservation programs provided for the local development of practices to meet new conservation problems. Under this authorization a conservation practice involving the establishment of protective vegetative cover in the fall of 1954, was developed for use under the 1954 agricultural conservation program in many States where vegetative cover had been seriously damaged by drought. A number of these States also included a similar

practice in their 1955 program in drought damaged counties, early enough to seed the eligible crops in the fall of 1954. Rates of cost sharing under this practice generally averaged 50 percent of the average cost of carrying out the practice, however provision was made for a higher rate of cost sharing where needed to bring about the desired performance, and some States authorized rates of cost sharing in excess of 50 percent of the cost under this provision.

Most of the practices developed for the establishment of this protective vegetative cover in drought areas provide for the seeding of annual legumes or grasses. However, some practices authorize the use of perennial and biennial legumes and grasses. The provisions of this emergency winter cover crop practice are somewhat more liberal than those of the regular winter cover crop practices. For the regular cover crop practices none of the growth may be harvested for hay or seed and cost sharing is limited to acreage in excess of the average plantings of such purposes for the past 3 years. For the emergency cover crop practices cost sharing could be approved for all acreages planted and the crop could be harvested for hay. This emergency practice therefore helped to meet the emergency conservation problem and also helped to relieve the shortage of forage in drought damaged areas.

THE PROGRAM FOR 1955

The important changes made in the 1954 program and the improvement in types of practices will be carried forward in 1955 with certain modifications. Provision is made for the completion of an effective part of a practice during the program year with the condition that the complete practice will be finished during an ensuing program year.

One of the major problems which will confront farmers and ranchers in 1955 is the protection and improvement of land taken out of the production of allotment crops. Marginal land now in production should be put in protective cover as a part of needed long-term land-use adjustments. Other land temporarily taken out of production should be treated in 1955 to build up reserves of moisture and fertility so that it can best serve in meeting future production needs.

In areas where farmers will be diverting land from normal crop uses, State and county committees and those agencies which participate with them in the development of State and county programs are to develop their programs so as to give particular attention to the conservation problems on land diverted from crop production. County committees are urged to give primary consideration to the requests of farmers and ranchers for Federal cost-sharing which is needed for practices which will meet the conservation problems on diverted acres.

The program for 1955 represents an increase of $55 million over the 1954 program to give more help to farmers in caring for lands temporarily diverted from allotment crops and also to help them make long-time land-use adjustments needed for conservation on a continuing basis. Assistance for this type of work, however, was not limited to the increase over 1954. County committees could use any portion of the total program which they considered necessary to assist in meeting the conservation problems on diverted acres. No special distribution was made of the $55 million increase. All funds have been distributed to States on the basis of the conservation needs formula contained in the appropriation act. New language, however, was included in the appropriation act which provided: "That the funds available for payments and grants from said sum of $195 million shall be distributed in the same proportion as the original allocation of funds for payments and grants for the 1954 agricultural conservation program * * *. This new provision was applied; however, the allocation determined under the conservation needs formula was larger for each State than the minimum determined under this new language. The diverted acre problem exists in every State. There are no practices set up solely for diverted acres—all of the practices in the program are available for treating the conservation problems on diverted acres which are generally similar to the problems on other cropland.

There is continued and emphasized local responsibility for general administration and selection of practices to meet within county problems under the 1955 program. County committees will be encouraged to develop practices to provide the most enduring benefits practicably attainable in 1955 on the individual farm. There is continued emphasis on the working together of county committees with the Soil Conservation Service and Forest Service locally to carry on a more efficient and technically sound program. Provision is continued for the local development of special practices to meet unforeseen conditions that arise during the year such as drought, flood and other disasters.

Estimated needs for selected conservation measures and amount performed under t 1953 agricultural conservation program

PERMANENT-TYPE MEASURES

Practice and unit	Estimated remaining needs [1]	Extent under the 1953 ACP
Dams and reservoirs [2]—number	2,620,895	47,3
Drainage [3]—acres	69,318,041	1,525,5
Permanent sod waterways—do	4,737,846	41,9
Standard terraces—do	106,861,527	636,0
Diversion and spreader terraces—miles	467,246	3,1
Establishing contour stripcropping [4]—acres	41,873,115	161,0
Establishing permanent cover on land subject to erosion—do	8,311,261	120,9
Seeding and reseeding pasture—do	147,983,047	4,610,9
Leveling land to conserve irrigation water and prevent erosion—do	11,203,582	311,5
Tree planting—do	29,445,415	80,2

ANNUAL AND RECURRING MEASURES

Practice and unit	Estimated annual needs [1]	Extent under the 1952 ACP
Contour farming [5]—acres	140,934,983	1,845,8
Crop residue management [6]—do	27,496,256	5,190,9
Stripcropping not on the contour—do	31,906,079	7,731,8
Liming materials applied for conserving uses (standard ground equivalent)—tons	80,771,976	15,136,4
Phosphate materials applied to conserving crops (20 percent P_2O_5 equivalent) [7]—tons	16,513,252	2,212,1
Green manure and cover—acres	103,731,522	10,860,0

[1] Survey of conservation needs as approved by the Secretary and used as basis for distributing agricultural conservation program funds among States.
[2] Includes earthen storage-type structures for erosion control, livestock water, and irrigation.
[3] Includes open and enclosed type drainage.
[4] Also includes the establishment of cross-slope stripcropping.
[5] Includes cross-slope and contour farming of row crops and close-seeded crops.
[6] Includes stubble mulching, and the leaving of high-cut stalks and stubble, on other than protected summer fallow.
[7] Includes phosphate in coffee grove fertilizer in Puerto Rico.

Accomplishments under the agricultural conservation programs—1936–53

Conservation measure:		*Amount*
Standard terraces	miles	1,089,000
Contour farming row and close-seeded crops [1]	acres	136,398,000
Establishing contour stripcropping [2]	do	4,787,000
Stripcropping not on the contour	do	100,929,000
Establishing permanent sod waterways	do	381,000
Tillage operations on cropland to prevent erosion [3]	do	92,050,000
Storage-type dams and reservoirs (earthen only)	dams	1,222,000
Drainage [4]	acres	32,707,000
Irrigation ditch reorganization to conserve water and prevent erosion	rods	13,878,000
Leveling land for irrigation	acres	6,078,000
Seeding and reseeding pasture	do	70,456,000
Constructing and maintaining fireguards to protect range land	miles	179,000
Control of competitive plants on range and pasture	acres	30,224,000
Tree planting	do	1,203,000
Timber stand improvement	do	665,000
Constructing firebreaks to protect woodland	miles	126,000

[1] Also includes cross-slope farming.
[2] Also includes cross-slope stripcropping.
[3] Includes listing, pitting, furrowing, on the contour; basin listing, emergency listing, pit cultivation and cross-slope chiseling.
[4] Land benefited includes open and enclosed drains.

Mr. WHITTEN. Mr. Peterson, we would like to have your statement on the agricultural conservation program.

GENERAL STATEMENT

Mr. PETERSON. Thank you, Mr. Chairman.

Mr. Chairman, and members of the committee, I am glad to appear before you today to discuss the agricultural conservation program.

It is not necessary for me to remind this committee of the importance of the conservation of this Nation's agricultural resources. The Nation is interested in the use and conservation of soil and water resources in a manner that will continue their capacity to produce for an indefinite time and therefore must plan ahead indefinitely. Farmers use soil and water resources as a means of livelihood and plan ahead only a few years. A considerable number of farmers are tenants who can only plan on a year-to-year basis.

The farmer's first consideration must be the economic well-being and security of his family and this does not always permit him to give adequate consideration to the most desirable long-time use and conservation of soil and water resources. The long-time objective of the Nation in the conservation of soil and water resources and the farmer's necessity to meet his immediate needs are therefore somewhat in conflict.

Many conservation measures call for expenditures of considerable funds. Their costs usually are not recovered until after a period of years, if at all. Some conservation measures require less intensive use of soil or water resources and a resultant decrease in immediate income. All the conservation needed for the Nation's long-time security cannot be adequately financed from the increase in revenue made possible by carrying out needed conservation practices.

If acceptable conservation practices are to be secured, the Nation must bear a part of the financial burden. It is in the public interest for the Federal Government to share in the cost of conservation measures. The nature and extent of conservation problems, economic conditions of the farmer and the importance of the land resource to the public are factors that must be considered in determining the extent of cost-sharing to be borne from governmental sources.

The need for continued production of agricultural products for food, fiber, and shelter is, I believe, generally recognized by all, but it may not be recognized by the general public that about two-thirds of all basic raw materials which go into the Nation's economy are derived from our fields and pastures, and another 5 percent from forest lands. As the Nation's population grows, sources of basic raw materials become increasingly important, not only from the standpoint of food, fiber, and shelter, but from the standpoint of material to furnish employment and commerce for the entire economic life of the country. Recent trends are toward fewer people engaged in the production of agricultural raw materials and a greater number of people engaged in the transfer, processing, and marketing of these products. The responsibility for protecting and conserving the Nation's agricultural resource is dependent on the action of a constantly decreasing number, and an even faster declining percentage, of people. The manner in which farmers and ranchers treat this great responsibility is of vital interest to the entire Nation. Since many of the measures which

farmers and ranchers need to carry out, to conserve and protect our agricultural resources, do not result in an immediate return to the individual commensurate with the cost, it is proper and in the public interest to assist him in conservation activities.

The Congress has recognized this need and has provided for the Department of Agriculture to assist in the conservation of these agricultural resources in a number of ways, by providing technical assistance, education, research, assistance through credit facilities, and direct financial assistance to offset a portion of the cost to individual farmers of conserving and protecting the land resources of the Nation.

The agricultural-conservation program is the program through which this direct financial assistance is provided. It assists farmers to protect the public's interest in the Nation's soil and water resources by sharing with individual farmers and ranchers in the cost of carrying out soil- and water-conserving practices which they otherwise would not carry out to the extent desired. The purpose is to help insure continued abundant production for all of the people of the country. It is our firm belief that every dollar of cost-sharing assistance provided under this program should result in obtaining conservation. Legislation which has authorized the formulation of annual agricultural-conservation programs, has limited such programs since 1943 to soil-building practices and soil- and water-conserving practices. We believe that it is not the purpose of this program to give relief to farmers or to supplement their income.

1956 BUDGET ESTIMATE

In order to meet the commitments made by the Department under the 1955 program, the budget proposes the appropriation of $250 million, reduced by the amount of funds not needed to meet commitments under the 1953 program. This appropriation would provide for meeting the full obligations under the program authorized by the Congress in the appropriation act for 1955. The proposed reduction because of unused amounts available from preceding programs is in keeping with the policy that the Department has followed for the last 2 years. Since the appropriation of funds to meet ACP obligations is made a year after the authorization is made, it is possible to make adjustments in the appropriation request to reflect available balances, if any, which were not used under preceding programs.

It is almost inevitable that there will be some unused funds at the end of any annual ACP. This situation is caused by factors, such as weather being adverse to the completion of planned practices, and changes in farmers' plans after obtaining approvals.

The situation in 1953, however, resulted in considerably more funds being unused than would be expected normally. First of all I want to make it clear that the Department has carried out the 1953 ACP exactly as authorized by Congress and as developed and announced by the Department of Agriculture in the summer of 1952. All of the State and county programs and procedures were developed in 1952. Likewise, farmers' requests for assistance for individual practices, and individual approvals by county committees were made in 1952, or before the 1953 program year was started. We felt that this program should be carried forward as previously authorized and as previously developed. We did not make program changes during the 1953 program year.

REASONS FOR 1953 UNOBLIGATED BALANCE

There will be available from the appropriation already made about $34 million which can be used to reduce the amount of the 1956 appropriation if the Congress so desires. The suggested language provides for this to be done. Underearnings for 1953 are larger than normal, primarily because of three factors:

1. In a large part of the country drought conditions existed in 1953, which had the effect of preventing farmers from carrying out desired conservation practices. In many cases, particularly where the establishment of vegetative cover was involved, weather conditions were so adverse that it was not agronomically feasible to carry out the conservation work which had been anticipated earlier by the farmer. In addition to this factor, the economic situation of many farmers was affected so adversely by the failure of crops and pastures that they were unable to finance the establishment of conservation practices even with a portion of the cost being shared under the ACP.

2. During 1953 there was, on a nationwide basis, some tightening up of the farmer's economic position due to increasing costs of things farmers had to buy, and relatively stable or decreased prices of products they had to sell. When farmers' net incomes are reduced, they tend to curtail expenditures for conservation ahead of reductions in general farm expenses and family living. Expenditures for conservation are in the nature of long-term investments.

3. The program-operating method for 1953 provided that farmers make their requests prior to the opening of the program for ACP assistance with respect to all conservation measures for which they desired cost-sharing assistance throughout the entire program year. This was a different approach from former years. Under it a very large volume of requests was made by farmers. It is evident now that many requests were made where the farmer was not sure whether he would be able to carry out the practice, but in order to maintain his eligibility to earn ACP assistance, he filed requests for all of the practices which he thought he might possibly carry out. In approving assistance for farmers' requests, county committees were therefore faced with the problem of distributing funds on the basis of a very large number and amount of requests. The amount of assistance which they were able to approve for individual practices was reduced by having to spread the available funds over this inflated signup. The final result was that many of these practices which were requested and approved were not carried out and the funds remained unused.

STATUS OF 1955 ACP

We do not yet know what the effect of many of the problems for 1955 will be insofar as the earnings under the 1955 program are concerned.

We have announced a program of $250 million as authorized by the Congress, and it has now been placed in operation in every State, at least to the stage that program offers have been made to farmers. In most States actual practices are being completed now and we feel that with the experience gained in the administration of the 1953 and 1954 programs that there is strong likelihood that in most instances farmers will take full advantage of the offer to share costs with them on needed conservation work of a very constructive nature.

ADVANCE AUTHORIZATION FOR 1956 PROGRAM

The budget includes a proposed advance authorization for a 19 ACP, of $175 million, including administration. In seeking authoriz tion for a program of this level, we have in mind that the 1956 progra will be continued at approximately the same level and scope as th programs authorized for 1954 and 1955, exclusive of the increase funds which were authorized for 1954 for emergency wind erosion control measures in Dust Bowl areas, and the additional fund authorized for 1955 due to the increased conservation needed becaus of diverted acres.

The 1956 proposal of $175 million also anticipates that it will no be necessary to make the small payment increases which are no required by section 8 (e) of the Soil Conservation and Domesti Allotment Act. The Department has proposed to the Congress tha this provision for increasing small payments be eliminated from th basic legislation, and we have also proposed that the appropriatio language authorizing the 1956 program indicate that none of th funds authorized for 1956 shall be used for making small payment increases. If the Congress does not see fit to eliminate the require ment for making small payment increases, additional funds would b required for the 1956 program to maintain it at the same level exclusive of emergency problems, authorized for 1954 and 1955.

DIVERTED ACRES FOR 1955

Acreage allotments for 1955 crops call for an acreage substantially less than the 1953 acreage. Through its various agencies the Depart ment of Agriculture is striving to give farmers assistance in making wise use of these diverted acres. The program's purpose is: (1) To move production toward balance with markets; (2) to avoid the con tinued accumulation of excessive supplies of commodities under price support programs; (3) to encourage wider use of soil conserving prac tices on acreage diverted; and (4) to make available to farmers all available research, and market information which would assist them in determining what shifts to make and how to readjust their pro duction to achieve maximum economic operations.

To effectuate this program, the following actions were taken in the summer of 1954: (1) As authorized by Congress, an increased agri cultural conservation program was announced to help farmers con serve and protect land diverted from allotment crops; (2) an intensive educational program was instituted under the direction of the Exten sion Service in cooperation with all other field agencies of the Depart ment, for the purpose of advising farmers with respect to making the wisest possible use of diverted acres; (3) the discretionary authority granted to the Department by the Congress in connection with price support programs, has been utilized to bring about better use of feed grains and encourage a sound livestock industry geared to our expand ing economy; and, (4) a program was announced requiring farmers to comply with a total acreage allotment and with the allotment established for each basic crop in order to be eligible for price support on any crop.

Because of the widespread drought, a substantial reduction in the corn crop, the Department's desire to eliminate restrictions and

pensive controls wherever possible, and other developments, the rogram as originally announced was modified in December 1954 to minate the control features except as required by legislation. Other atures of the program are still in full force and effect.

STATE ADMINISTRATION OF ACP

During the last Congress, the period for Federal administration of e ACP was extended for 2 more years, with a specific directive to e Secretary to seek in that period, action by States that desired undertake State administration of the program. As of this time, would appear that it is too late for any State to assume the respon- ibility for 1955 program operation, and there are no State proposals ending which would enable them to undertake the program for 1956.

We will continue to work with any State government that has acted satisfactory authorizing legislation and comes forward with n acceptable State plan in an effort to ascertain whether the program an be properly and effectively carried out under State government irection. This is consistent with our overall policy of decentralizing uthority wherever possible in order to get greater local interest and etter local adaption of the programs which the Department has nder its jurisdiction.

Mr. Ritchie and his associates are here. Mr. Ritchie is the Ad- inistrator, gentlemen of the committee. He has a statement and ould be glad to answer any questions.

Mr. WHITTEN. First, I would like to ask some questions in con- ection with your statement, Mr. Peterson. I think this is a very ine statement, so far as recognition of the need for conservation is oncerned. There are 2 or 3 recommendations in it, however, which find hard to reconcile with what I have learned in the years that I ave dealt with this appropriation. For instance, we have discussed many times in this hearing as to whether there is a decided effort to ransfer to the Extension Service in the States certain of the action rograms. The recommendations to the Congress and the law passed ast year to provide for State administration of the program, plus the ast paragraph of your statement, indicate some tendency in that irection.

Apparently, they look forward to giving this program to the States. In the average State, the means of meeting it would be through the Extension Service. I have no quarrel to pick with the Extension Service whatsoever, but that is the way the average State handles it. That is hard to reconcile with the operations as I have known them in the past.

At the present time, through the 2 years that your administration has been in, and in all the years prior to that time, one of the problems has been to get the various States to use the money in such a way so as to get some real soil-conservation work with the funds appropri- ated. With the long history of trying at the top level to get the funds used on practices that really have some soil conservation benefits, such as the permanent or semipermanent type, and since all the trouble has been at the county and State level through the years that I have been here, I just cannot see how anyone could recommend that you put the job back at that State level.

You have recommended to us repeatedly that efforts be made to get the States and the counties to use these funds in a way to bring about maximum benefits. But under this paragraph, you look forward to just turning it over to the States and letting them handle it. I just cannot understand it.

Mr. PETERSON. That is not the intent, Mr. Chairman. I think the intent is this: We are willing all the time to explore with any State or any of the States which have a proposal to make which can accomplish the purposes of the applicable legislation which the Congress has passed, and do it on a basis which will accomplish the very things that you are mentioning, the purchase or the assistance in the acquisition of more enduring soil conservation practices.

Mr. WHITTEN. That is very fine. I suppose it is a human thing to say that, when the law is not too good, Congress passed it. But, actually, this legislation which was passed last year, specifically directed the Secretary to get States to undertake the program. That was recommended by the Department of Agriculture, was it not?

Mr. PETERSON. I assume it was. I do not know.

Mr. WHITTEN. So while Congress goes along with the Department, the Department sponsored this change, and it points out that it fits right in with budget changes and things of that sort, which have been the subjects of our consideration earlier.

Mr. WHITTEN. The other thing I raise here is the cutting out of the small payment increases.

SMALL PAYMENTS PROVISION

Mr. PETERSON. My information on that point, Mr. Chairman, is that 92 or 93 percent of all of the payments being made now qualify under the small payments increase provision, so that it is not particularly effective for its original purposes.

Mr. WHITTEN. I do not mean to take issue. I am just trying to get the matter cleared up in my own mind as well as in the record. I have been in the congressional fights on this program for quite a long period of years, many times having restored the funds over the recommendations of the Administration. One of the main issues always on the floor is as to whether this program helps the small farmer or the small producer, where much of the problem exists. If you take out any provision that gives special emphasis to the small payments and to the small farmer, you seriously weaken chances of retaining the program, based on past experiences in floor fights on this program.

Mr. PETERSON. I am sure that is correct, Mr. Chairman.

Mr. WHITTEN. To modify or change it or make it easier to administer is one thing. But if, perchance, the Department of Agriculture wished to get rid of the agricultural conservation program, if your big farm organizations wish to get rid of it, and if I were their counsel and was advising them how to get rid of it, the first recommendation I would make would be to take out any special protection for the small payments.

Mr. PETERSON. Mr. Chairman, in that connection there are 93 percent of the payments which are less than $200 in amounts. That increase, therefore, under the small payment provision is practically universal and does not favor one group over another at the present time. The provision does not apply to the farmers in the lower in-

come brackets. It does not particularly even apply to small farmers, because they are rather substantial farmers who have payments now which would qualify under the small payments increase. It is only because the provision does not seem, under present circumstances, to be accomplishing its originally intended purpose that we are suggesting that the small payments increase provision be eliminated and those funds be thereby made available for further extension.

Mr. WHITTEN. I still say that, if I wanted to destroy the program, and was counsel for the group that wanted to destroy it, the first recommendation I would have would be to cut out anything that gives special attention to the small farmer or the small payments. That is one thing that helps save the program in these fights that we have had heretofore. As you point out, 92 or 93 percent are in that category. But I will say to you that the other 6 or 7 percent, and the fact that in some instances there have been large payments, have been the chief threat to the whole program.

Mr. PETERSON. You are familiar with that background in much more detail than I am, Mr. Chairman.

Mr. WHITTEN. I look at it from the floor fights that we have had through the years in trying to save the appropriation.

Mr. PETERSON. I can only say this: Our purpose in making the recommendations to you for the elimination of the small payments increase is not made with the intent of destroying this program. It is made contrarywise, with the intent of making it more broadly applicable.

Mr. WHITTEN. Could you not modify the formula or do certain other things, without taking away this emphasis? It is my observation back home and in the various visits I have had over the United States, that your big operators, your big landowners—maybe that is the reason they are big—are the first to take advantage of any program that is made available from the Government or elsewhere.

If the whole purpose of this program is to get soil conservation work done on lands that need the work, your major problem is with the relatively small landowners and small farmers, where these payments will be small. That is where your prime soil erosion and things of that type exist.

So I definitely am of the opinion that this program should give emphasis to, and additional help for the small landowner and the smaller farmer. It is not that it is any grant or relief program, but it is because that is where the major part of your soil conservation troubles exist. That is where the lands are.

STOPPING FARM VISITS BY COMMITTEEMEN

I might say also, and I would like your comment on it, that one of the tragedies that I have seen in this program is that you stopped the committeeman at the county level from calling on the farmers who have the lands that needed the program the worst. When you hold them in the office and let the farmer come in, you are passing up the best chance that I know of to get work done in the most needed places.

I would like to have you discuss your reasoning behind it and what the present policies are.

Mr. PETERSON. Would you like to take that one, Mr. Ritchie?

Mr. RITCHIE. I believe when we changed in 1954 from having that in the preceding year, it was primarily because we had found, as Mr. Peterson pointed out in his statement, that these farm visits, while they created interest in conservation, brought forward a great many requests that were so overwhelming to the committee that they were not able to apply the available funds to those that were most likely to get accomplished. It tended to deter the farmer who was willing to go ahead and do the work because of the amounts that had to be set aside for these requests which did not ever develop into action.

Mr. WHITTEN. It was my observation that a big part of the trouble happened to be because it was an election year. Unfortunately we had this proposed change and this decided effort made in an election year. Quite naturally, the political parties felt that the county committeemen might have some political interests. Certainly those of us who sponsored this effort had no such thing in mind. I can see easily that that could defeat one party or another. I think if we had tried it in any other year the reaction and the response might have been a lot different.

Mr. PETERSON. I think, Mr. Chairman, in that connection there are always interpretations made by both parties, irrespective of where it is. I am sure in this case, and I farmed for 10 years and had experience with the county committeeman calling on the farm, that we view it this way: When the farmer files his application and says he is going to do a certain thing, and we say certain things are available to him if he does it, there is, in effect, a contract. When you make that contract you have an obligation to set aside the funds with respect to delivery on that contract. If the farmers does not deliver, then, of course, your funds are not used. The intent is to actually set aside your funds for those farmers who are actually going to comply with their end of the contract and not distribute those funds, and, in effect, have them residual after a program year is completed. That is the basic purpose of the approach that is being taken, as I understand it.

Mr. WHITTEN. I can see that that would be one of the problems connected with it. I know in some areas the delay of reallocating the funds was a problem. However, personally I felt that that particular problem could have been met by having an earlier date for the farmer to put up his share, setting an earlier date for calling unused funds back, and reallocating every 30 days or every 2 weeks, or some other such period.

In other words, I think that problem, which I recognize, could have been solved by certain other administrative changes. But that is a matter of opinion.

Mr. PETERSON. I will say this, Mr. Chairman: We are perfectly willing and anxious to explore all the time any administrative changes that are feasible in making the program more effective and will certainly give consideration to any suggestions that this committee may care to make in that connection.

Mr. WHITTEN. Thank you, Mr. Peterson. That is fair indeed.

Now we will have Mr. Ritchie's statement, if we may.

FORMULATION AND DEVELOPMENT OF ANNUAL PROGRAMS

Mr. RITCHIE. Mr. Chairman, I have a statement on 1 or 2 points that might be well to cover. The first point is on the formulation and development of the annual programs. In formulating the 1955 national agricultural conservation program, we first asked every county committee to arrange a meeting with all of the agricultural agencies and interests in the county. This included the Soil Conservation Service technicians, soil conservation district supervisors, extension agents, Forest Service representatives where available, Farmers Home Administration representatives and others.

At this meeting, recommendations were obtained as to what the national program needed to be in order for farmers in that county to make the most effective use of cost-sharing under the agricultural conservation program. These county recommendations were transmitted to the State committee, which, in turn, called meetings of a similar group at the State level to review them and to formulate recommendations to the Department.

Within the Department these recommendations were reviewed by the Extension Service, Soil Conservation Service, Forest Service, and by the Agricultural Conservation Program Service. On the basis of these and the authorizations of the Congress, there was formulated and submitted to the Secretary the national program for 1955.

In turn, each State has developed a 1955 program for the State within the bounds of the national program. Each State program has been developed jointly by the many agricultural agencies and interests in the State. Again, within this State program each county has developed a 1955 agricultural conservation program for the county.

In addition to the authorities provided specifically in the national program, there is a provision which makes possible the development of special practices for local use which are needed to fit the peculiar situation in the county and which would not need to apply nationally.

Many of these county practices have been developed and have been approved for 1955. Also, we have authorized counties to reexamine the cost-sharing rate, and to vary it by practices so that those practices needing the higher rates could so receive them, provided that for the county program as a whole, the average rate for all practices would result in about a 50 percent cost-share by the Federal Government. Many counties are taking advantage of this opportunity to emphasize the practices which are most difficult to achieve, and which farmers are most reluctant to carry out with only their own resources.

For the 1955 program, we have made adaptations designed to fit particularly the diverted acreage problem. We have narrowed the scope of the program for practices which would be primarily designed to bring additional cropland into production.

On the other hand, we have increased the opportunities under the program for dealing with conservation problems on farmlands which are being taken out of crop production because of acreage allotments.

Perhaps the most commonly expressed recommendation for the 1955 program from the field was that we keep it as nearly the same as the 1954 program as we could, in the belief that with the year's experience for 1954, many of the problems in carrying out the program had been solved and that a better program could be carried on in 1955 in the

same or a similar setting with that adopted by the Department and by the States for 1954.

WIND-EROSION-CONTROL ACTIVITIES UNDER THE 1954 PROGRAM

During 1954 the Congress appropriated 15 million additional dollars for conservation practices in the Dust Bowl area. These emergency measures were offered and have been carried out within the limitations specified by the Congress. We are not in a position to determine with exactness the needed amount until after all farmers have exhausted their time for filing for payments earned. Consequently, it will be some time before we can give you an exact estimate on that matter.

MODIFICATIONS IN THE 1954 AND 1955 PROGRAMS BECAUSE OF DROUGHT CONDITIONS

During the 1954 program year, it became apparent that the States severely damaged by drought would not be able to carry out their conservation program as originally planned and instituted. Farmers were not able to supply the needed matching funds on their own, and in many instances the types of practices on which emphasis should be given in drought conditions were not the same as those for which farmers had requested and received approval of cost sharing earlier.

Consequently, in the fall of 1954 we authorized all of the drought States to realine their program to better adapt it to the drought conditions, to remove some of the program restrictions which made it impossible for farmers to receive cost sharing unless they planted more than their normal acreages of certain protective cover plantings, and to increase the rate of cost sharing in those instances where it was apparent that farmers could not match dollars with the Federal Government because of the prolonged and recurring drought situation.

In doing so, we recognized that the remaining funds available from 1954 might not be sufficient to deal with the problem. Consequently, the States were authorized to open their 1955 program early for the needed practices on drought-damaged lands, making a concurrent and identical offer to farmers so that when their 1954 funds were exhausted they could proceed with their 1955 funds to treat the remaining portion of the problem.

In order that the 1954 funds could be as fully utilized as possible on this problem, we have authorized the States to use those funds to the fullest extent needed, and to use only that amount of the 1955 funds which is necessary to meet commitments over and above what their 1954 funds will deal with.

Consequently, there will be a minimum inroad upon the 1955 program fund in these States by activities carried on in the fall of 1954. We also have authorized the States to carry forward into the spring of 1955 activities which are needed to meet the emergency drought conditions which still exist or which have arisen because of last year's and preceding years' droughts. We cannot tell at this time the extent to which these restorative measures or preventive measures will have to be carried out in the future. We hope that the emergency period is substantially over.

PROPOSED LEGISLATION RELATIVE TO FEDERALLY OWNED NONCROPLAND

We wish to call the committee's attention to a legislative proposal submitted by the Department with respect to the scope of the agricultural conservation program. This item which modifies the basic legislation is to make it clear that ACP is applicable to federally owned noncropland for practices which must be carried out on such lands by private persons as a means of protecting private lands.

The reason we call this to your attention is that while it will extend the scope of the program if enacted, we do not believe that it will sufficiently extend it to make necessary increased appropriations to deal with this problem. Rather we will expect that the farmers in these areas will utilize funds which would otherwise be spent on their private lands in taking care of these emergency or pressing conservation problems on the federally owned land where the benefit from the conservation is to the private land.

This will not make any change in the method of distributing funds among the States as set forth in basic legislation and in the annual appropriation language.

REDUCED FEDERAL PAYMENTS UNDER ACP

Mr. WHITTEN. There are 2 or 3 matters here. We constantly raise the question of whether the budget recommendations are gradually cutting down the action agencies and Federal payment programs which help to get work carried out.

I notice in Mr. Peterson's statement that he recognizes the problem of getting farmers to do the work under present conditions, where their costs are going up and where income has leveled off or is dropping.

I have had a chance to consider further what you are doing by recommending the elimination of the small-payments provision. The argument offered was that about 92 percent of the participants come under it anyway, and that you have a lot of problems there. However, I see, by looking further, that you recommend reducing the program by $75 million. So apparently it is not a recommendation to eliminate an administrative problem. You are cutting approximately $14 off the Federal payment and using your recommendation of eliminating the small-farm provision to justify yourself in a reduced program next year. So putting the two together, this is just another recommendation to cut down the amount of Federal participation. Yet you are doing it at a time when your own statement shows that you recognize the farmers' financial problems are greater and it is harder to get him to do the work, due to his costs going up and his income leveling off.

Mr. PETERSON. Mr. Chairman, if I understand the background correctly, there was $195 million as the base level of the 1955 program authorized in 1954. That was extended by $55 million, making a total of $250 million for the 1955 program, to meet specifically the problems created by diverted acreages.

The program now being requested contemplates the same base on the assumption that the small payments increase would be eliminated.

Mr. WHITTEN. That is right.

Mr. PETERSON. In other words, the basic program being proposed for authorization for 1956 would be on the same base as the program

offered for 1954, namely $195 million, which is arrived at by the budgetary item for authorization of $175 million, and giving credit to the $20 million which is now utilized to make the small payments increase.

Mr. WHITTEN. That is right. So, as you say in your language:

The 1956 proposal of $175 million also anticipates that it will not be necessary to make the small payment increases which are now required by section 8 (e) of the Soil Conservation and Domestic Allotment Act.

What you are doing, if I understand it, is recommending a reduction in the funds available for 92 percent of the farmer participants to the extent that the small payments add to what he would get. As a result, you are simply cutting down the Federal offer by the amount of the small payment, and it is reflected in a reduced announced program for next year.

Mr. PETERSON. As I understand, the individual farmer who may have a payment, qualifying within the small payments increase, would have his payment reduced by the elimination of the small payment increase.

Mr. WHITTEN. And that is 92 percent of the participating farmers, I believe you said awhile ago.

Mr. PETERSON. That is the figure I have, Mr. Chairman.

Mr. WHITTEN. Then it shows up by a reduction of $75 million in the announced program from that the Congress passed for the present year—$250 million.

Mr. PETERSON. The base program to be available for this work which we are seeking was $175 million, as I just explained.

Mr. WHITTEN. It makes it hard to understand. Of course, I realize the Department is not the President's Budget Bureau. However, in view of your recognition that the farmers have less means with which to do this and that it is harder to get them to do soil-conservation work at a time when their own finances are strained, it is hard to understand why you would cut out or reduce the Federal participation by whatever amount the small-payments provision adds to what the farmer would get. The two just do not jibe in my mind. I just believe there is a conflict in the two, and that you fail to recognize who needs it the most.

BALANCING THE PROGRAMS OF THE DEPARTMENT

Mr. PETERSON. It should be pointed out, Mr. Chairman, that all of the programs that are operated within the Department are directed largely at assistance to agriculture and the country. We come back again to this matter of balance which I spoke of before. Having so much funds available, you have to spread the emphasis where you think the emphasis at a given time can make the greater accomplishment. That is in the light of the best judgment that was available, what has been attempted to be done here.

Mr. WHITTEN. I appreciate that. I am probably burdening some of those in attendance by repeating that. We have not had this chance to discuss it with you. In the years that we have been here, we have found many times that many farmers, many people in the Department of Agriculture, and many Members of Congress, are primarily interested in one phase of the Department of Agriculture's work.

Mr. PETERSON. That is where many of our problems arise.

Mr. WHITTEN. In former years, I have seen the ACP group, as reflected by farm organizations and others, out to cut the Soil Conservation Service appropriation to the bone on the theory that ACP reaches the broad spread of the American farmer, and Soil Conservation Service was dealing on an individual basis and was not getting the job done fast enough. During that same period of time, I have seen many folks who believed primarily in the Soil Conservation Service, out to eliminate the ACP program on the ground that the ACP was broadcasting its funds and it would be much better to do the highly specialized work through the Soil Conservation Service. In addition there were those primarily interested in Extension Service who felt that you ought to have it done on a Federal-State basis. They had their own approach to it.

The point I make is that on this committee we have tried to point out that all of these things have a place, and that we need a coordinated program. They all need to be geared up to the point of reaching the maximum end result. We have tried to do our part on that.

Mr. ANDERSEN. Would the Chairman yield at that point?

Mr. WHITTEN. Yes.

Mr. ANDERSEN. I think you are absolutely right on this point you are bringing up. The subcommittee, through the years, has done its very best, toward equalizing, as you state, the attention given to the various programs, which are of various degrees of importance to certain groups in our Nation. We act as the stabilizing influence and try to make sure that no worthwhile program is harmed in any way.

Mr. WHITTEN. I appreciate that, Mr. Andersen.

CHANGE IN TECHNICAL ASSISTANCE PROVISION

Now, I would like to give you some history on this 5 percent provision. I have had a number of letters from farmers asking about the 5 percent provision which we have heretofore had, where the State and county groups could set aside as much as 5 percent for technical assistance from the Soil Conservation Service. That was first put in at my suggestion. I would like to review with you why. In the first place, there are a lot of Members of Congress who, when you try to get the ACP program through, have said: "We would rather have 5 percent for more soil conservation technicians than to have the whole ACP program." Those Members of Congress are Members who live in particular sections of the United States where soil erosion and related problems are at a minimum. They are places where they honestly have reasons to prefer additional technical service.

In trying to hold the ACP appropriation, we need the support of those areas, and we need also to have a program which has within it the means of giving special emphasis to the needs of each area. Not only that, but when this provision was first written in here, county committees under ACP had a separate program, setting up a separate little soil conservation service, you might say. We had many investigations which found this situation to exist.

You would have an engineer with the SCS go out and lay the plans and check it. Then you would have some member of the ACP committee go out and look it over before the ACP would pay for it.

In our efforts to keep both ends of this in balance and have the technicians all in one service, we provided that if, at the local level, the ACP program needed more technical assistance, they would have some means to finance it.

At the Washington level, it enabled us to show Members of Congress that we had given you enough latitude to make this program fit their needs.

In my own judgment, it prevented the Soil Conservation Service from getting rid of the ACP and the ACP getting rid of the Soil Conservation Service. They were both about to win in getting rid of the other, but they were falling themselves. There is a long history on it.

The thing that disturbs me is that under your proposed language this 5 percent can be paid to any State agency. It looks to me like the Extension Service is getting its head under the tent again in this proposed change in language.

Mr. PETERSON. Well, I would say first, Mr. Chairman, the background that you have outlined accounts, from my past experience, for my statement to your committee the other day. We welcome the close scrutiny of the committees of Congress over this particular administrative branch with respect to our budgets as a matter of principle. There are varying viewpoints which need to be applied to all of these programs.

Secondly, all of these programs are important and have a place to play. I think it would be a mistaken view to say that they should all go along equally at any given time. But I feel that they should go along in balance. One year you may have problems that require emphasis on one particular arm. In a different year or a different period you may have emphasis on another different arm of the total services. But they should be equipped, financially and otherwise, to go along in balance to service the total needs of agriculture and the people on the land where the crops are produced.

As to the broadening of the use of technical services under the 5-percent provision which you refer to, I must assume, and I think it a correct assumption, that the basic purpose is to ulilize any technical services which are available wherever they may be available and useful to carry forward the basic objectives of the ACP.

Mr. ANDERSEN. Would you yield at that point, Mr. Peterson?

Mr. PETERSON. Yes, sir.

Mr. ANDERSEN. You speak about your basic purpose. I try my very best to be neutal in this argument between the proponents, on the one hand, of Soil Conservation Service, and on the other those of Extension. I am a strong supporter of both. But when I see the words "Soil Conservation Service" eliminated in the language that we have had in the bill for several years, gentlemen, I begin to wonder if we would be fair to Soil Conservation Service if we should agree with that proposed change in language.

Mr. WHITTEN. Well, if you could consider the item here by itself, I could not argue too much with Mr. Peterson. But we have already seen that for 2 straight years the Soil Conservation Service has been cut down drastically. We have seen increasing new districts each year and no funds made available to service them. We have seen the budget cut the action programs, and at the same time give tremendous increases to State experiment stations and the Extension Service. So we cannot think of this one item without tying it in with other things that are in this budget.

Mr. ANDERSEN. Mr. Chairman, is this not what attorneys call prima facie evidence?

Mr. WHITTEN. Yes; it speaks for itself. It shows on the face of it.

Mr. PETERSON. I can see, Mr. Andersen, and gentlemen, where that is a possible interpretation. I can only give you my own opinion and the intent as I understand it. In my own State, and in the western area generally where I do have some familiarity with the two programs as they have operated, it was my feeling personally that for many years and during the period when Soil Conservation was being established, that the emphasis during that period of time was on the Soil Conservation and equipping it, and I think properly so. But at the same time, the needs for research and for education were not kept at a level to carry forward the information that is being developed in the new technology which has happened, and you might say the technological revolution which has occurred in agriculture in the last 15 years. I think it appropriate that in seeking that balance we now pick up the lag that Extension and research had in that period. Again we come to the matter of judgment, have we gone too far or have we not yet gone far enough? Again, as I said before, it is my personal feeling, and I am sure the feeling of all the people in the Department, that all of these agencies are needed, that all of the programs are needed. There is more work to do for both Soil Conservation and Extension than this committee or the Department or anyone is going to be in the position to give them the resources to do it with in the foreseeable future.

The programs of both are tremendous. They are going to need resources, both of them, into the foreseeable future.

BALANCING THE PROGRAMS OF THE DEPARTMENT

Mr. ANDERSEN. Mr. Peterson, I want to express my hope that we will balance it in this fashion. When I say we, I mean the Congress. I hope we will leave the amount proposed as an increase for Extension, but on the other hand I also hope we will restore every dime necessary to service the new districts which have come into being under the Soil Conservation Service.

That is my personal hope as far as what we will have in this bill, Mr. Chairman.

Mr. WHITTEN. But even there we have the problem of the overall budget. We have to face the issue of whether we increase the budget and take the load for not trying to balance Federal expenditures.

Mr. ANDERSEN. I might say on that point, Mr. Chairman, we had a pretty fair lesson last spring in this respect on the floor of the House. There was not too much consideration given then for the need of balancing the budget in the Department of Agriculture. Pressure groups upset the very well-balanced bill which this subcommittee reported to the House floor unanimously. You and I, as you know, attempted to hold our total appropriations for Agriculture within the budget total as requested. We recognized the need for watching the interests of the taxpayer and at the same time doing justice to these two important programs, Extension and the Soil Conservation Service.

Mr. WHITTEN. I do, too. But this balance that you are talking about, as this budget presents it, is one of cutting down on one hand

and adding to the other. I realize you have just so much money t do this with. You have to provide it the best you can. And we a going to be faced with that at the end of these hearings. But, whe you require one soil conservationist to serve 3 or 4 counties, an then take the money that normally would be available for ne districts and put five county agents in a county, that might be balanc but many people would not agree with you.

I used to be in the Mississippi Legislature as the only representati from my county; others had three. I had to claim I did as muc good as those three from each county, but I did not prove it to an body. A conservationist says he does as much as 10 county agent because you give him 2 counties, and you have 5 agents per count in the experimental areas.

Mr. PETERSON. The placement of the 5 county agents is, as wa indicated here, a pilot or experimental approach to determine wha kind of a procedure and program can be applied and used by th county agent where there is only 1, or only 2, or however man there may be.

Mr. WHITTEN. I do not know whether I can buy that, Mr. Peterson I do not question your sincerity. But where the money is requeste here on that basis and when you approve its use to set up five count agents in a county, experimentally, I would say that the norma feeling would be that that is the direction in which you plan to go i it proves out all right.

Mr. PETERSON. I must not have made myself clear. Certainl that is not the direction we propose to go. It would be totall unrealistic to say that we need X number of county agents over th United States. As I recall, there are about 3,100 counties in th country and those counties vary tremendously in their agriculture. For example, I was in California a few days ago and was looking a this very thing. The various counties were listed and the various agents per county. It ran from a dozen, I think, in Los Angeles County, down to one, in counties that were range and grazing area counties. The need will vary widely as between the type of agriculture, its diversity and intensity in the various counties. But I think we do need to find out and also seek the very best and most effective extension methods that can be applied so that we can get by with the least number and get our money expended the most efficient way. That is a continuous program.

Mr. WHITTEN. What I tried to say yesterday was that I know you get some benefits from such a plan. If the money were available, it would be nice to have one agent for every farmer.

Mr. PETERSON. I would not like that, Mr. Chairman.

Mr. WHITTEN. I am just saying there would be some benefits, because it would mean an additional manager. I know the county agents are good. But as long as dollars are limited, and as long as you feel you have to have a Soil Conservation Service, an ACP, and various other programs, there is a problem of proper balance. You have spelled out in the budget your sense of balance. We, in turn, through our years here, have our own ideas of balance.

Mr. PETERSON. I like to think of it in this fashion, Mr. Chairman. We come up here with a proposal which is a starting point. It represents our best judgment. Certainly you people are going to apply you best judgment. Collectively we will come out with the final answer.

Mr. WHEELER. Mr. Chairman, I wonder if I could say a few words about the 5-percent language, because I do not think there is any real disagreement among us. It may be that our proposed language does not clearly indicate what we have in mind.

Mr. WHITTEN. I would like that. But let me make one point prior to your statement, because I would like for it to be covered. We have tried to mesh these various programs together so that each can contribute to the overall job. We also have recognized that hardly a single program could be justified entirely on its own. Unless we balance the various programs, all of which are needed, we are likely to lose all of them. I doubt that there is one of them, if you set out to eliminate the others and keep that one, that could be retained. It would be shortsighted if you tried to.

The point I mention here is that we should give close thought to how the ACP can be better geared up to help carry out the intent of the Watershed Act. We need to give special attention to the forestry end, where tree seedlings and plantings contribute to conservation. We need to give close attention to see how the soil-conservation program fits into the special problems that exist in each watershed.

I hope that at the conclusion of the hearings we can work out, and we hope to have your recommendations, the best way to be sure that each of these is contributing to the overall watershed business. These small dams and so forth constitute quite a program. They are badly needed in so many watersheds in the country.

But that helps very little if you are not going to have reforestation, grasses, and similar things to keep that little dam from filling up with the soil that is behind it.

The point I make is that there is a place for each of these things, and we hope we can work out the best way to make each contribute to its maximum.

PROPOSED CHANGE IN TECHNICAL ASSISTANCE PROVISION

Mr. WHEELER. I think we can. That is exactly what we wanted to do in suggesting this change. As you have pointed out, prior to this time, the 5 percent provision applied directly and exclusively to the Soil Conservation Service. The Department has appreciated that provision being in the Appropriation Act and has utilized it to the place where, in the last year the transfers amounted to over $5 million.

Mr. WHITTEN. Could I interrupt you? When you have a sum of money amounting to $5 million, it makes a lot of folks want to get in on it. Do you not think so, Mr. Wheeler?

Mr. WHEELER. I was going to say that the technical assistance of SCS at the county level has proved very valuable. Our desire was to permit the same kind of assistance to be rendered by other agencies that have qualified people who can assist, such as the State foresters. In addition, in certain areas there may be drainage districts or other organizations having technical people which, if they could be reimbursed through this same means, could be rendering technical assistance to the committees.

It certainly was not the purpose to write the SCS out, but rather to leave that provision the same as it is at present, but permit the use of other organizations who might have special skills in forestry or other fields to render the same kind of service.

Mr. MARSHALL. Mr. Wheeler, it is rather obvious that the soil-conservation program does not have informational people at the local level. Could it be contemplated that there might be a shift of funds to an organization to provide information for the agricultural conservation program? Would that be contemplated?

Mr. WHEELER. Not through the operation of this provision because this relates to technical services—services of technicians.

Mr. MARSHALL. Is not information technical service also?

Mr. WHEELER. I do not think so in the sense of the provision that was written in by the Congress and as we have administered it; no. It relates to technical soil-conservation services.

Let me conclude by saying that it seems to me this could be worked out by reinserting the words "Soil Conservation Service" and then providing immediately afterward that the funds also could be transferred to the other Federal, State, or local agencies for technical services.

Mr. PETERSON. In many States there are State engineers, for example, having to do with the administration of State water laws. In irrigation and reclamation districts, there are water masters for the district. There are State and county foresters. There are many and various types of organizations within the States which do have technical services and technical people who could be used effectively.

Certainly the use of the soil-conservation technicians in connection with this matter under discussion should not be eliminated. That was not the intent, to eliminate them. But by the same token, where there are other available technical services which can be effectively used, it would seem desirable to have the capacity to use them.

Mr. WHITTEN. Mr. Marshall, do you have a question?

FORMULATION OF NATIONAL AGRICULTURAL CONSERVATION PROGRAMS

Mr. MARSHALL. Mr. Chairman, we have a statement which intrigues me a great deal.

We have a statement saying that—

> These county committee recommendations were transmitted to the State committee, which, in turn, called meetings of similar groups at the State level to review them and formulate recommendations to the Department. Within the Department these recommendations were reviewed by the Soil Conservation Service and by the Agricultural Conservation Program Service. On the basis of these and the authorizations by Congress, there was formulated and submitted to the Secretary a national program for 1955.

How does that differ from the way you have handled it in previous years? That is not new, is it?

Mr. RITCHIE. That is not a major change. We have consistently tried to be sure that we get full opportunity for recommendations from the field before we go ahead and set up the national program. They are in the process of carrying forward that system right now for recommendations on the 1956 national program.

Mr. MARSHALL. Mr. Ritchie, you hold these meetings at a State level where these people discuss these practices. Do you follow that up by having them submit the minutes of their meeting to you?

Mr. RITCHIE. Yes. Each State committee, the State conservationists of SCS and a representative of the Federal Forest Service, after all of the agencies and interests at the State level have discussed this thing, those three formulate what they believe to be the concensus and

the recommendations which most properly should be made to the Secretary on the national program. That comes in to us.

Mr. MARSHALL. Am I correct in saying that after these recommendations are made, they are put in the form of State information and they send it back to the counties as approved for the counties to follow, in the way of these practices?

Mr. RITCHIE. After the States send the recommendations in, and we formulate the national bulletin, we turn that over to the States and they develop, the same agencies develop, a State program and then they send their State program out to the counties and ask the counties to develop a county program within the confines of their State program with this special provision that I mentioned, that is, whereby they have authority to go outside of the State and even the national program to deal with peculiar problems that they have.

Mr. MARSHALL. I am particularly interested in that, because of a number of county people having told me that they have submitted recommendations which apparently have not gone anywhere, which have not been acknowledged. What would be the reason for that?

Mr. RITCHIE. I cannot understand that situation existing. Of course, the counties probably make recommendations which are not all accepted as sound by the State group and passed on to us.

Mr. MARSHALL. Would it not be proper if they did?

Mr. RITCHIE. It would be a tremendous volume.

Mr. MARSHALL. Should they not be informed if they are acceptable or not?

Mr. RITCHIE. Sir, we have tried not to undertake to review all the county recommendations. It is not that we are not interested in them, but it would be almost physically impossible. On the State recommendations last year, as I remember them, after we had condensed them and gotten them digested down, we had possibly 200 typewritten pages. If we got all of the individual county recommendations it would be extremely difficult for us to get through them. So we are asking the States to make that preliminary review of them.

Mr. MARSHALL. Following that, if a State made a preliminary review, would it not be proper for them to acknowledge to the county committee the receipt of these recommendations and their opinions about them?

Mr. RITCHIE. I believe that quite frequently is done, that in subsequent meetings with the county committees they discuss these recommendations and why they did not approve all of them just as we, after we set up the national program last year, had meetings with the State committees and State conservationists, and discussed with them why we did not feel that we could approve every recommendation that they made to us.

Mr. MARSHALL. It would seem to me, Mr. Ritchie, that unless there is some acknowledgment of the efforts on the part of the county committees that they would soon lose interest in approving the agricultural conservation programs.

Mr. RICHIE. Our desire is, to be sure, that it is followed through.

ACP STATEMENT OF PRACTICES

Mr. MARSHALL. Why do you ask for an application of fertilizer when fertilizer is not needed in a particular practice?

Mr. RITCHIE. It is not our intention that that be the case.

Mr. MARSHALL. I have before me a handbook listing the practices. Here is one of the practices that is listed:

Initial improvement and established permanent grass or grass-legume cover for soil or watershed protection.

And then there is this paragraph:

The minimum amount of liming materials must be applied in the deficient area unless soil tests show or the county committee is satisfied that this minimum application is not necessary as a part of the improvement measures. A minimum application of fertilizer must be made, but cost-sharing may not be approved for the fertilizer unless seeding is needed and required.

That is very clear as far as lime is concerned. You are not requiring lime to be put on unless it is required. But in my reading of this, it could certainly indicate to me that I would have to put on fertilizer whether it was needed or not.

Mr. RITCHIE. Those are specifications which are developed locally by the people at the State or county level, I presume, since we do not spell out specifications in that detail nationally.

I judge that would result from a determination locally that they needed fertilizer in all of these cases. Certainly I, too, would be concerned if they are requiring fertilizer where fertilizer was not needed for accomplishment of the practice.

Mr. MARSHALL. It so happens that the county committee said to me that there were areas where they didn't know of any need for application of fertilizer, but that they had not been able to give an interpretation of what this meant. They said, "We think it is foolish for the farmer to put on fertilizer, but this is what it says, that we cannot make payment to him for carrying out his seeding practice unless he puts on fertilizer."

The farmer says, "If I have to put fertilizer on which is not needed, I am not going to bother putting in the grass seeding either, and coming in the program."

Mr. RITCHIE. We certainly would be very anxious to help establish whether it is an unnecessary requirement, and to discuss it. I believe it is one imposed at the State level. We would certainly be glad to discuss it with them and see if we can remove any unnecessary requirements.

Mr. MARSHALL. I notice in reading this document over we have two comparatively simple practices. It is my understanding that this is a handbook that is to be used in order to enable the farmer to understand what he will need to do in order to qualify for these agricultural conservation practices.

We have two practices. One of them is worded:

Initial treatment of cropland to permit the use of legumes and grasses for soil improvement and protection.

That is a comparatively simple heading, is it not? Then it follows:

Applicable only to cropland devoted in 1954 to legumes (other than vegetable or truck crops and soybeans) or perennial grasses and to cropland which the county committee determines will be devoted to such eligible uses in 1955. This practice is not applicable on any acreage on which cost-sharing for liming materials is otherwise permitted under the State program. This practice is applicable only if all other improvement or establishment measures (seeding, fertilizing, etc.) determined by the county committees to be needed on the same acreage in 1954 are carried out in conjunction with the application of the liming materials and no cost-sharing is allowed for the performance of such other measures. Any acreage on

which Federal cost-sharing is given under this practice under the 1954 program will not qualify for cost-sharing for liming in subsequent years. The application of liming materials contained in commercial fertilizers, phosphate rock, or basic slag, will not qualify for cost-sharing under this practice.

A farmer, in attempting to analyze that gobbledegook on a simple practice like that would certainly be discouraged, Mr. Ritchie, before he got half through such an explanation.

Then we have over here: "6". This is another comparatively simple practice.

Initial establishment in the cropping of biennial or perennial legumes, or mixtures of such legumes, for green manure and for protection from erosion.

A good stand must be obtained and a good growth incorporated into the soil in the fall of 1954 or in the spring of 1955. The green-manure crop may not be incorporated into the soil prior to September 1, 1954. Pasturing consistent with good management may be permitted but none of the growth may be harvested for hay or seed. Volunteer stands will not qualify. Federal cost-sharing will be limited to the acreage in excess of the normal acreage of such plantings which shall not be less than the average of all such plantings for the years 1953, 1952, and 1951. A suitable seedbed must be established by plowing, disking, or spring toothing and performing such other operations as are necessary in the area for the establishment of a satisfactory seedbed. Liming materials and fertilizers will not be eligible for Federal cost-sharing under this practice.

I just have one comment to make. With the practices written up in such fashion as that, it is no wonder that the participation in the agricultural conservation program has been going down in this past year.

EXPECTATION OF REDUCED FARMER PARTICIPATION

In justification, Mr. Peterson, of the agricultural conservation program service, you say:

During 1953 there was, on a nationwide basis, some tightening up of the farmer's economic position due to increasing costs of things farmers had to buy, and relatively stable or decreased prices of products they had to sell. When farmers net incomes are reduced, they tend to curtail expenditures for conservation ahead of reductions in general farm expenses and family living. Expenditures for conservation are in the nature of long-term investments.

I heartily agree with that. We are thinking in terms of the budget for the next year. If that was true then, this problem has not lessened to any extent now, has it?

Mr. PETERSON. No, I would not say it has lessened to any appreciable extent, Mr. Marshall.

Mr. MARSHALL. So we would have a tendency to expect that in this next fiscal year additional strain will be put on the soil by farmers and less conservation will be carried out?

Mr. PETERSON. That depends to some degree upon what is done with the acreages which come out of the production of the basic crops. But I think that would be a normal expectation, that the farmer will seek alternative means of utilizing his lands to produce income. The addition of the $55 million last year was pointed at that diverted acreage program, and the base amount from which that started was $195 million. Subject to the discussions we have already had on the $20 million small-payments increase, or thereabouts, we tried to seek the same base this year of $195 million. Actually, it is $175 million with the small-payments increase out.

UTILIZATION OF COMMUNITY COMMITTEEMEN

Mr. MARSHALL. I believe it has been customary that in carrying out the operations of the soil-building practices, agriculture-conservation programs, community committeemen have been called in to a meeting and these practices were discussed with them. Why was that not done during the 1954 program?

Mr. RITCHIE. It was contemplated that that would be done, that committeemen would be kept informed of the program and would be used where practical in helping advise the county committee and in passing on the farmers' requests for cost sharing. The major change was that we did not have committeemen go down the road and call on every farmer, as they have in the past.

There have been varying degrees of utilization of community committeemen, apparently. We certainly feel that the community committeeman discharges a very important function in the operation of ACP and ought to be used.

Mr. MARSHALL. It is possible that there may have been some misinterpretation of your regulations in that regard, because many, many committeemen have said that there was considerable change in the agricultural conservation program that they were never informed about at a meeting. They had expected to be called in, as had been the practice, to have it discussed with them.

The result was that they were unable to inform the farm neighbors as to the changes that took place in the program.

Mr. RITCHIE. Might I say at this point that one of the big problems that we have encountered in carrying out the 1954 program was this process of getting farmer understanding of changes that had been made. I believe every State is concentrating more effort this year on trying to help both simplify the provisions of the program and to bring about a better understanding of what the practices are.

EFFECT OF ACREAGE ALLOTMENT REQUIREMENT ON ACP

Mr. MARSHALL. One of the problems in this last year of participation was brought about by the necessity of complying with all acreage allotments to be eligible for this program. You have had some problems in the administration of that particular law that was passed by the Congress; have you not?

Mr. RITCHIE. Yes, sir, we have. The law becomes effective with the 1955 program, except in the case of cotton. It has been effective on cotton for many years. The problem we are experiencing now is——

Mr. MARSHALL. What recommendations are you making to the Congress? Are you making any about this particular problem which you have?

Mr. RITCHIE. In a hearing called by the Agricultural Committee of the House, the Department has gone on record as favoring the repeal of that provision so that compliance with the basic commodity allotments will not be required in order for a farmer to be eligible for cost-sharing under the program.

Mr. WHEELER. A report has gone to the Senate Committee on Agriculture and Forestry in which we recommend the repeal of not only the provision in the 1954 Agricultural Act, but also similar pro-

isions in an earlier act relating to cotton allotments. We made our osition clear that we favor that rather than simply repealing just he provision of the 1954 act which added the other crops to cotton. he Department is definitely on record on that.

Mr. MARSHALL. Presently this provision is having the effect of emoving incentive to apply for soil-conservation payments and also as had the effect of giving the impression that there is redtape inolved and people are not staying within their acreage allotments.

Mr. WHEELER. Yes, and we are quite concerned about it. We ecommended, as I indicated, that the Congress repeal those requirements.

Mr. WHITTEN. Mr. Deane?

CURRENT INTEREST IN CONSERVATION

Mr. DEANE. Mr. Chairman, the only comment that I would like o make has been brought out very ably by Mr. Marshall.

Mr. Peterson, I was attracted to your paragraph 2 on page 5, here you comment that the farmer had relatively stable or had ecreased prices on the products that he had to sell. Do you feel that tightening of the conservation program, as I contemplate it in the udget, is going to help him to maintain his standards of income?

Mr. PETERSON. The purpose of the conservation-income program s not to supplement income, Mr. Deane. It is to stimulate the use of conservation practices on the farm. We have not approached the building of a budget for the agriculture-conservation work in relation to the income of the farmer, per se.

Mr. DEANE. The only reason that I bring it up is the fact that in he next instance it says:

> When the farmers net incomes are reduced, they tend to curtail expenditures for conservation ahead of reductions in general farm expenses and family living.

The thought that I am trying to get over is that if we circumscribe he program with such rigid restrictions and directives, and the farmer is faced with a lowering of his income, do you think we are going to maintain the interest on the local level that I think Mr. Marshall had in mind, and what really concerns me?

Mr. PETERSON. It seems to me that over the country there is a growing interest in conservation. I think by the same token it is true, however, that if a farmer's monetary sources are lessened; he has to pay his taxes, he has to buy the services of production by way of insecticides, he has to service his equipment and handle his machinery, he is going, to some degree, to neglect the things that he might do on a long-term basis. His operations become more short-term in his consideration with the result that even though these payments are available for long-term conservation practices, he is not going to be in a position to participate and take advantage of those payments to the same extent that he would be if his own resources were larger, because of the cost-sharing nature of the operation.

Mr. DEANE. What groups or individuals or organizations oppose the program of the method of payments? Can you put your finger on any groups or individuals who are not sympathetic with the idea?

Mr. PETERSON. I have not had any groups approach me, Mr. Deane. Whether any groups have talked to others in the Department, I do

not know. No groups have talked to me about the size or the character or the use of the conservation payment programs.

Mr. DEANE. I wonder if any other members of your staff would supplement any opinion on that point.

Mr. RITCHIE. No, sir, I do not think we can. We have had the same experience. No one has come to us.

Mr. DEANE. I did not understand your answer.

Mr. RITCHIE. No one has come to us in ACPS, not any group, recommending that we reduce the program.

AUTHORIZATION FOR ACP, 1945 TO 1956

Mr. DEANE. Just in a nutshell, I wonder if you would, for the record, for a period of years that you would select, 5 or 6, give the comparative story of the service, and what you are now recommending in this budget so that we can have a full and complete picture of the program?

Mr. WHITTEN. You can insert a table here, with the amount of money and the size of the program.

Mr. RITCHIE. All right.

(The information requested is as follows:)

Advance authorization for the agricultural conservation program, 1945–56

[In thousands]

Program year	Requested in budget	Authorized by Congress	Program year	Requested in budget	Authorized by Congress
1945	$300,000	$300,000	1951	$285,000	$285,000
1946	300,000	300,000	1952	285,000	256,500
1947	300,000	300,000	1953	256,500	250,000
1948	200,000	150,000	1954	140,000	195,000
1949	300,000	262,500	1955	250,000	250,000
1950	262,500	300,000	1956	175,000	

Mr. WHITTEN. Mr. Natcher?

ACP ADJUSTMENTS RELATIVE TO DIVERTED ACRES

Mr. NATCHER. You state, Mr. Ritchie, that for the 1955 program the Department has made adaptation designed to fit particularly the diverted acreage problem. You further state that you have narrowed the scope of the program of practices which would be primarily designed to bring additional cropland into production. On the other hand, you state you have increased the opportunities under the program for dealing with conservation problems on farmlands which are being taken out of crop production because of acreage allotments.

Mr. Chairman, in order to save time, at this point I would like to have Mr. Ritchie place in the record a more detailed statement concerning this matter.

Mr. WHITTEN. That will be fine.

(The requested statement follows:)

Agricultural Conservation Program Adjustments To Help Meet Diverted Acreage Problems

Since production adjustments were being called for in 1955, the scope of the agricultural conservation program was narrowed in regard to practices that develop additional farmland. The irrigation and drainage practices are limited to projects which are not primarily designed to bring additional land into agricultural production.

The need for conservation treatment of diverted acres was a prime consideration in the development of the 1955 program. The national bulletin states:

"One of the major problems which will confront farmers and ranchers in 1955 is the protection and improvement of land taken out of the production of allotment crops. Marginal land now in production should be put in protective cover as a part of needed long-term land-use adjustments. Other land temporarily taken our of production should be treated in 1955 to build up reserves of moisture and fertility so that it can best serve in meeting future production needs.

"In areas where farmers will be diverting land from normal crop uses, State and county committees and those agencies which participate with them in the development of State and county programs are to develop their programs so as to give particular attention to the conservation problems on land diverted from crop production. County committees are urged to give primary consideration to the requests of farmers and ranchers for Federal cost sharing which is needed for practices which will meet the conservation problems on diverted acres."

The following specific adjustments were made in the 1955 program to better adapt it to diverted acres.

(*a*) Cost sharing is offered for the establishment of permanent vegetative cover where needed as part of a long-term land use adjustment.

(*b*) The rotation sod crop practice was extended to all the diverted acres on a farm.

(*c*) The cover crop and green manure practices were expanded to permit cost sharing on all of the elements of performance involved, whereas in 1954 cost sharing was authorized only for the seed necessary to establish the practices.

(*d*) A new practice was developed which authorizes cost sharing for seedings necessary to protect cropland shifted for the entire 1955 crop year from crop production to green manure or cover crops.

(*e*) The practice for initiation of stubble mulching into the farming system was changed to provide that notwithstanding any limitations in the practice, cost sharing could be authorized to the extent necessary to protect acreage diverted from normal crop use in 1955.

Although the remaining practices in the 1955 national bulletin have not been adjusted specifically to treat the problems created by diverted acres, many, such as terracing or strip cropping, are available for use on diverted acres.

Language Changes

Mr. Wheeler. Mr. Chairman, we have discussed some of the language changes. I would suggest, if you do not want to take the time to discuss them further, we could insert in the record the pages which explain them in some detail.

Mr. Whitten. We will be glad to have your explanation of the language changes in the record.

(The material is as follows:)

Changes in Language

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For necessary expenses to carry into effect the provisions of section 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended (16 U. S. C. 590g–590q), including not to exceed $6,000 for the preparation and display of exhibits, including such displays at State, interstate and international fairs within the United States;

1 **[**$191,700,000**]** *$250,000,000, which shall be reduced by an amount equal to that portion of the loan from the Commodity Credit Corporation for advance purchases of conservation materials and services under the 1955 program which can*

be repaid from funds not used for the 1953 program, to remain available until December 31 of the next succeeding fiscal year for compliance with the program of soil-building practices and soil- and water-conserving practices authorized under this head in the Department of Agriculture *and Farm Credit Administration* Appropriation Act [1954] *1955*, carried out during the period July 1, [1953] *1954*, to December 31, [1954] *1955*, inclusive: *Provided*, That not to exceed [$22,500,000] *$23,000,000* of the total sum provided under this head shall be available during the current fiscal year for salaries and other administrative expenses for carrying out such program, the cost of aerial photographs, however, not to be charged to such limitation; but not more than [$4,020,000] *$4,520,000* shall be transferred to the appropriation account, "Administrative expenses, section 392, Agricultural Adjustment Act of 1938", *and for the 1956 program an amount not to exceed 5 per centum of the amount of funds available for payments under the 1956 program for the State shall be available for transfer to any Federal, State, or local public agency for services of technicians in formulating and carrying out the agricultural conservation program, but such use of these funds may be made only on the recommendation of the county committee and approval of the State committee: Provided further*, That payments to claimants hereunder may be made upon the certificate of the claimant, * * * *Provided further*, That such amount shall be available for salaries and other administrative expenses in connection with the formulation and administration of the [1955] *1956* program of soil-building practices and soil- and water-conserving practices, under the Act of February 29, 1936, as amended (amounting to [$250,000,000] *$175,000,000*, including administration, [but of this amount not more than $195,000,000 may be used until a final program has been adopted relative to the use of acreage diverted from production,] and formulated on the basis of a distribution of the funds available for payments and grants among the several States in accordance with their conservation needs as determined by the Secretary, except that the proportion allocated to any State shall not be reduced more than 15 per centum from the distribution for the next preceding program year, *but none of such funds may be used for the increase in payment authorized in Section 8 (e) of the Soil Conservation and Domestic Allotment Act, as amended*, and no participant shall receive more than $1,500 [: *Provided*, That the funds available for payments and grants from said sum of $195,000,000 shall be distributed among the several States in the same proportion as the original allocation of funds for payments and grants for the 1954 agricultural conservation program] *except where the participants from two or more farms or ranches join to carry out approved practices designed to conserve or improve the agricultural resources of the community)*; but the payments or grants under such programs shall be conditioned upon the utilization of land with respect to which such payments or grants are to be made in conformity with farming practices which will encourage and provide for soil-building and soil- and water-conserving practices in the most practical and effective manner and adapted to conditions in the several States, as determined and approved by the State committees appointed pursuant to section 8 (b) of the Soil Conservation and Domestic Allotment Act, as amended (16 U. S. C. 590h (b)), for the respective States: [*Provided further*, That not to exceed 5 per centum of the allocation for the 1955 agricultural conservation program for any county may, on the recommendation of such county committee and approval of the State committee, be withheld and allotted to the Soil Conservation Service for services of its technicians in formulating and carrying out the agricultural conservation program in the participating counties, and the funds so allotted may be placed in a single account for each State, and shall not be utilized by the Soil Conservation Service for any purpose other than technical and other assistance in such counties:] *Provided further*, That for the [1955] *1956* program [$2,500,000 shall be available for technical assistance in formulating and carrying out agricultural conservation practices and] $1,000,000 shall be available for conservation practices related directly to flood prevention work in approved watersheds: [*Provided further*, That in carrying out the 1955 program the Secretary shall give particular consideration to the conservation problems on farmlands diverted from crops under acreage-allotment programs:] * * *

Other than the usual changes in year dates applicable to the program covered by the appropriation and the period of availability thereof, the estimates include proposed changes in language of the item as follows:

The first change provides that the appropriation for 1956 of $250 million for carrying out the 1955 program as authorized by the Congress shall be reduced by the unobligated balance under the 1953 program. This will not affect the size of the 1955 program since such balances would be used for the partial repayment of the 1955 fiscal year loan from the Commodity Credit Corporation for the advance purchase of conservation materials and services. This will reduce by a like amount the repayment which otherwise would have to be made from the 1956 fiscal year appropriation. These balances are presently estimated at $34 million.

The second and third changes increase by $500,000 (1) the amount which may be used for salaries and other administrative expenses, and (2) the limitation on the amount to be transferred to the appropriation account established under section 392 of the Agricultural Adjustment Act of 1938, as amended. These funds are required to provide more supervision and review of agricultural stabilization and conservation county committee operations.

The fourth change provides that an amount not to exceed 5 percent of the amount of funds available for payments under the 1956 program in a State shall be available for obtaining technical services from any Federal, State, or local public agency. Such technical services are to be used in the formulation and carrying out of the 1956 agricultural conservation program. Transfer of these funds would be made only on the recommendation of the county committee and approval of the State committee. This change replaces the authority included in previous appropriation acts providing for the transfer of up to 5 percent of any county allocation to the Soil Conservation Service for technical services. The proposed change would accomplish the following:

(1) The authorization for technical services would be more clearly associated with the administrative expense item in the appropriation language. This is desirable since the cost of technical services authorized by this provision is an expense of operating the program and should be more closely related to the administrative expense item than it has been in past appropriation acts;

(2) The proposed language would make it possible to draw not only upon the Soil Conservation Service, but also other agencies, in obtaining the services of technicians. For example, services with respect to forestry practices might be obtained from State foresters. Such services might, in appropriate cases, also be obtained from local public agencies. The changes would have no effect on the Department's continuing policy which prohibits ASC committees from employing technicians of their own to perform technical work;

(3) The proposed language would change the limitation on the amount of funds which could be used for technical services from 5 percent of the county allocation to 5 percent of the funds available for payments in the State. This would provide needed flexibility within a State to permit use of the available funds more nearly where needed within the State.

The fifth change proposes an overall agricultural conservation program for the crop year 1956 of $175 million as explained above.

The sixth change proposes to eliminate language which for 1955 limited the program to $195 million until a final program had been adopted relative to the use of acreage diverted from production. Language similar to this is not considered necessary in the authorization for the 1956 program as proposed in the 1956 budget estimates.

The seventh change would make inoperative for the 1956 agricultural conservation program the provision in section 8 (e) of the Soil Conservation and Domestic Allotment Act that payments of less than $200 shall be increased by specific amounts. This provision became effective in 1938 when commodity payments made up approximately 85 percent of all program payments. No commodity payments have been authorized since 1943. Under present programs more than 90 percent of all payments are under $200 and must be increased under this provision. The criteria for making small payment increases is not the size of the farm but the size of the payment. Under the present program the conservation problems on small farms can be more adequately considered by the method being used by county committees of approving cost-sharing assistance based on the conservation problems of the farm or ranch, taking into consideration such problems for the entire county and the work for which they consider the Federal cost-sharing is most needed. Small payment increases require from 12 to 15 percent of the total funds available for assistance. Under the 1955 program $25,797,000 is withheld as a reserve for this purpose. It is believed that more conservation per dollar spent could be obtained without this provision. The Department is planning to submit a proposal for an amendment to the Soil

Conservation and Domestic Allotment Act to eliminate this requirement from the basic legislation.

The eighth change eliminates the language specifying that in the distribution of funds for 1955, $195 million should be distributed among the States in the same proportion as was originally allotted for the 1954 program. This is not necessary for 1956 since the provisions of the Agricultural Act of 1954 (sec. 502) and the language proposed in this item for 1956 state: "except that the proportion allocated to any State shall not be reduced more than 15 per centum from the distribution for the next preceding program year." This will prevent the possibility of substantial reductions in any State's proportion of the total program funds available. For 1955 every State received an allocation in excess of the minimum under the provision which it is proposed to eliminate.

The ninth change would exempt any ACP payment from the $1,500 payment limitation where participants from two or more farms or ranches join to carry out approved practices designed to conserve or improve the agricultural resources of the community. ACP payments with respect to these projects would be subject to the $10,000 payment limit contained in section 8 (e) of the Soil Conservation and Domestic Allotment Act, as amended. These community projects often are the only means of solving the problem and can only be carried out efficiently through cooperation. However, the $1,500 limit seriously hampers the operation of many of these projects because they are so large that cost-sharing in excess of $1,500 is required to get the necessary work carried out. For some projects a $1,500 ACP payment would represent only a small percent of the total cost. ACP cost-sharing rates for most of these projects would permit payments up to about 50 percent of the cost if it were not for the $1,500 limit.

The work required in connection with these community projects must be carried on as a single unit rather than as separate projects for each individual farmer whose lands will be benefited. They can most practicably be carried out by the farmers designating a manager to handle the project. In such cases the payment limitation applies as $1,500 to only 1 person. The change requested will enable many of these cooperative projects to be carried out which would not otherwise be undertaken.

The tenth change would eliminate language that provides for up to 5 percent of the allocation for any county to be withheld and allotted to the Soil Conservation Service for the services of its technicians. Change number four as explained above, replaces this language making it unnecessary to continue this language.

The eleventh change eliminates language which required that a minimum of $2,500,000 under the 1955 program be used only for technical assistance. This minimum is no longer necessary since in recent years the amount used for technical assistance has been far in excess of this amount. In 1953 the estimated use of funds under the SCS 5 percent transfer provision was about $4.3 million and in 1954, $5.4 million.

The twelfth change eliminates the language which directed that in carrying out the 1955 program, the Secretary should give particular consideration to the conservation problems on farm lands diverted from crops under acreage allotment programs. Section 502 of the Agricultural Act of 1954 requires the Secretary to give particular consideration to such problems. Therefore, such language is not needed for 1956.

Mr. PETERSON. I want to thank you, Mr. Chairman, for your very fine hearing.

Mr. WHITTEN. Thank you, Mr. Peterson. I want to say for the record that it has been a pleasure to discuss these problems with you. I appreciate your attitude. I am certain your views are helpful to the committee.

Mr. PETERSON. Thank you, sir.

Mr. WHITTEN. We will now recess until tomorrow at 1 o'clock.

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